TEXAS TECH UNIVERSITY
Edward E. Whitacre Jr.
College *of* Engineering™

ROBOTICS PROGRAM



Utilizing robotics to inspire and mentor the next generation of engineers, scientists, and problem solvers enabling them to become the innovators, leaders, and skilled workforce of the future.

Benefits of Robotics

The use of robotics is emerging as a new track in improving safety standards, reducing costs, and helping to raise efficiency, speed and performance in many industries. The WCOE Robotics program is working to prepare students with the knowledge, skills and practices that will prepare them as the next generation who will drive innovation and our nation forward. When students engage in robotics-centered learning they experience hands on applications that are applicable and transferable to post-secondary study and future careers. They engage in creative and innovative thinking and are challenged to develop and refine their ability to think strategically, reason analytically, and problem solve. Robotics also instills teamwork, time management, interpersonal skills, and communication, all of which are critical in maximizing technical expertise to its full potential.

Click here to watch video

Building Confidence, Friendships, Skills and Robots

DONATE ONLINE

Your support of our robotics programs will provide students with quality STEM learning opportunities

The Texas Tech University Whitacre College of Engineering Robotics program has been serving the students of West Texas and New Mexico for over a decade, providing K-12 students with outstanding robotics centered learning experiences, mentoring, and competitive opportunities.

Program Options:

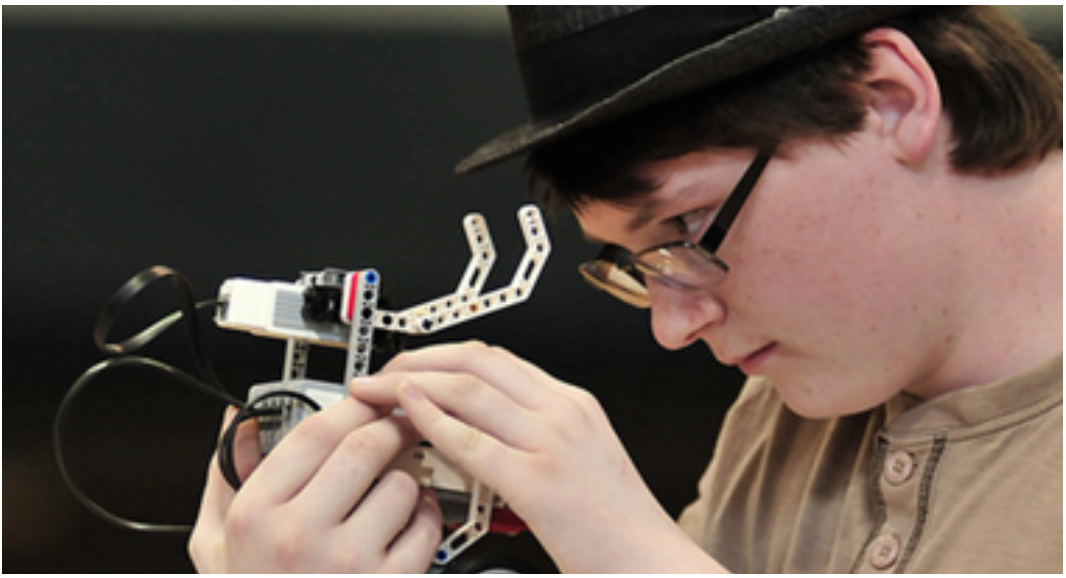
To meet the diverse educational needs of the communities it serves, the Whitacre College of Engineering (WCOE) Robotics initiative has several outstanding STEM-related program options available for school districts and community organizations: Get Excited about Robotics (GEAR) grades K-8, Boosting Engineering, Science and Technology (BEST) grades 6-12 and First Tech Challenge (FTC) grades 7-12. Through these initiatives, thousands of student participants are provided with age appropriate, real world challenges requiring students to work in teams to design, build, program, troubleshoot, test, and improve their robots to complete the challenge.

Our Program Goals:

The WCOE Robotics program uses the platform of robotics competitions to both educate and cultivate an interest in STEM studies and careers. Through its outreach efforts the program works to ensure its strategic goals of:

- providing equity and access to quality STEM programming for all students
- equipping participants with the knowledge, skills, and practices of STEM disciplines needed for post-secondary study and the 21st century workforce
- providing authentic challenges that foster the development of the skills valued by industry
- cultivating a sustained interest and awareness in STEM education within the community
- reaching historically underrepresented and underserved populations

Each school within the program's service area is eligible and welcomed to participate regardless of socioeconomic status, size, or location. To ensure that no child is excluded from quality STEM learning opportunities due to lack of financial resources, GEAR and BEST have no fees associated with participation and many of the materials for these two programs are provided to participants free of charge.



GEAR

GET EXCITED ABOUT ROBOTICS

GEAR is an eight week robotics challenge held each spring that is designed to excite young students in grades K-8 about engineering. We believe that all children should have equal access to opportunities, therefore there is no cost to participants other than time and travel and the competition is open to all interested elementary and middle schools and after school clubs. Working in teams of 3-5 students, the challenge requires teams to use LEGO MINDSTORMS NXT or EV3 kits to design, program, troubleshoot, test, and improve their robots at their schools/clubs under the guidance of a teacher/coach. The theme of the competition changes every year and is motivated by real world applications of robotics (automated farming, robotic surgery, unmanned space travel, etc.).

Website:
http://www.depts.ttu.edu/coe/stem/gear/index.php


110

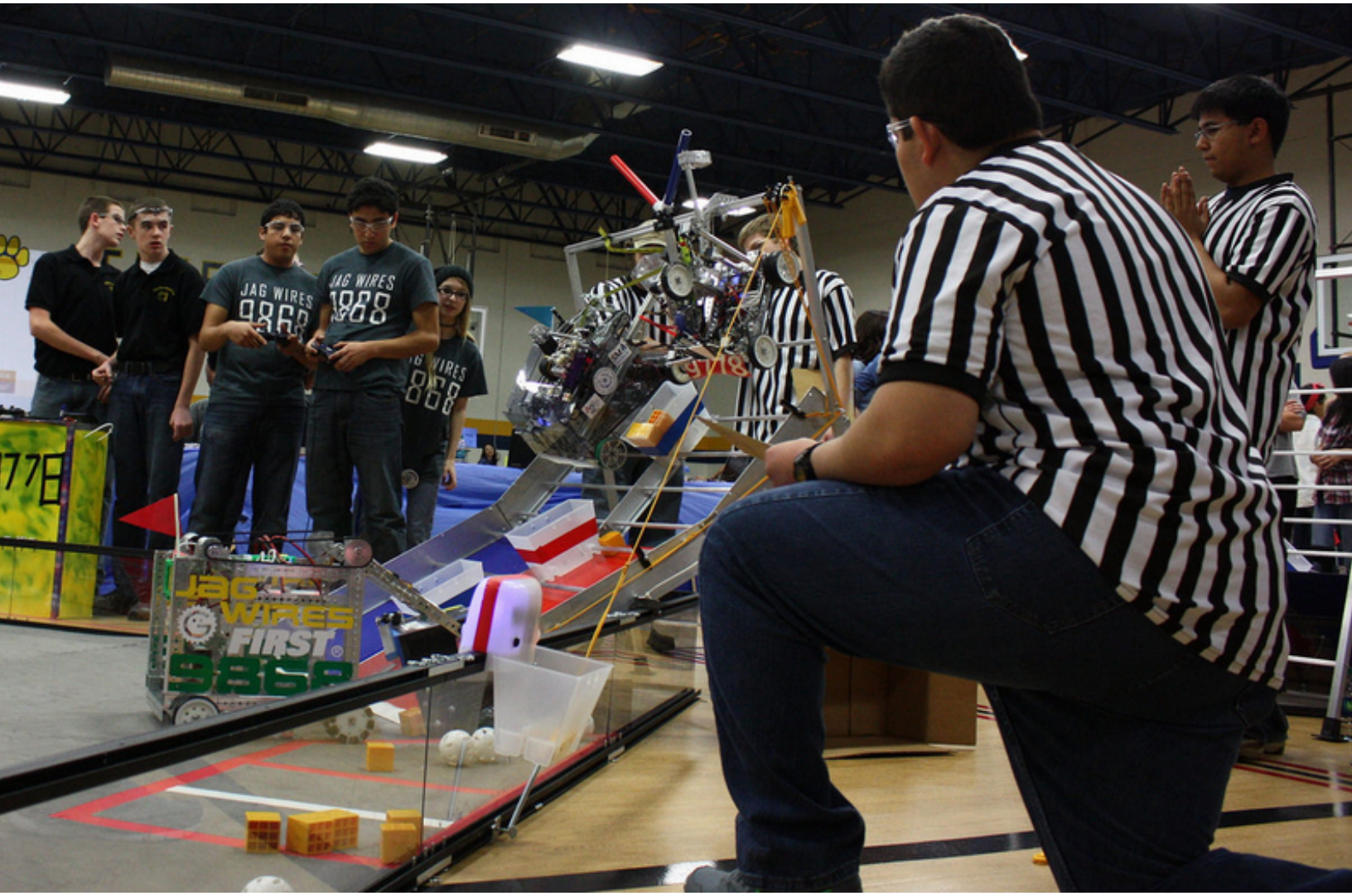

127


112

BEST
BOOSTING ENGINEERING SCIENCE AND TECHNOLOGY

West Texas **BEST** is a six week robotic competition for middle school and high school students that occurs each fall. School participation is free and any school is eligible to participate regardless of socioeconomic status, size, or location. Many of the materials necessary for participation are provided for teams free of charge. Teams have six weeks from the unveiling of the competition theme to develop a robot that will successfully complete the challenge assigned for that year. Teams are mentored by Texas Tech students.

Website:
http://www.depts.ttu.edu/coe/stem/best/index.php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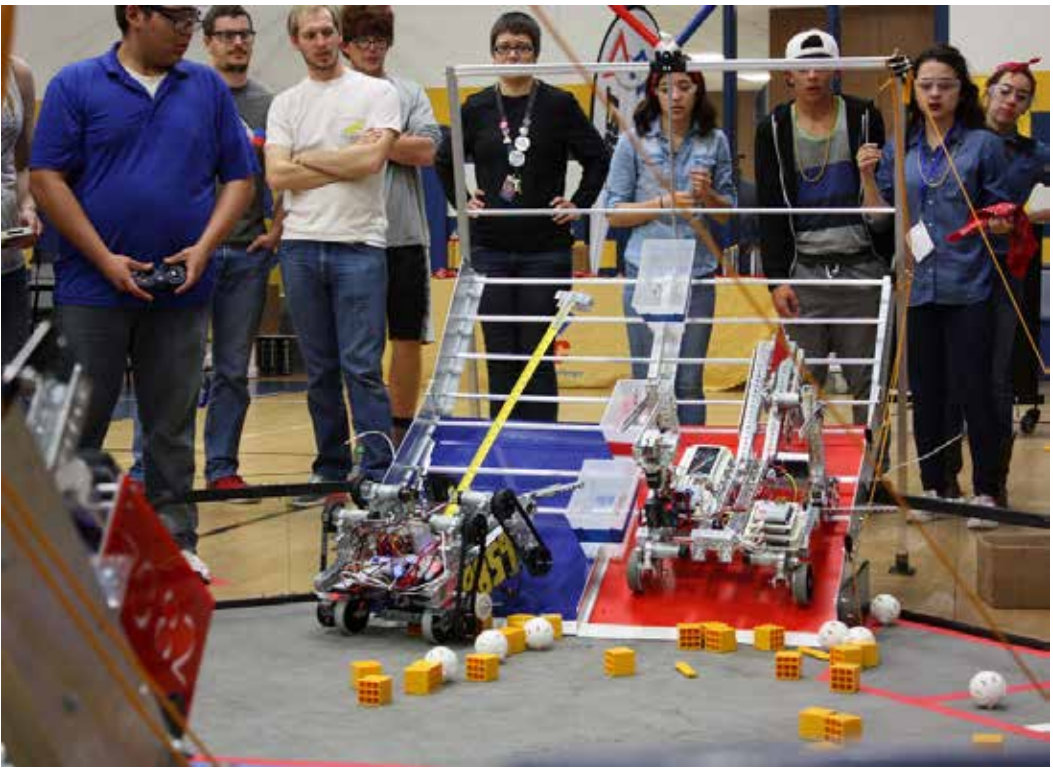


FIRST TECH CHALLENGE

The **FIRST**® Tech Challenge (FTC) is a mid-level robotics competition for students in grades 7th-12th (ages 12-18). FTC is designed for those who want to compete head to head using a sports model. Teams of 10+ students - including coaches, mentors, and volunteers - are required to develop a strategy and build robots based on sound engineering principles. Teams design, build, and program robots to compete in an alliance format against other teams to solve the game task for a given year. The robot kit is reusable from year to year, and is programmed using a variety of languages. Awards are given for the competition, as well as for community outreach, design, and other real-world accomplishments.

Website:
http://www.depts.ttu.edu/coe/stem/ftc/index.php

Sponsor Targeted Giving

DONATE ONLINE

Tournament Mats

DONATE ONLINE

Practice Materials

GEAR Robotics Tournament Mats and Practice Materials - To ensure that no child is excluded from quality STEM learning opportunities due to lack of financial resources, the GEAR Robotics program provides each participating school or organization with one free tournament mat and set of practice materials. These mats and materials are identical to those used during the actual tournament. The mat layout and practice materials change each year to reflect the year's robotics competition challenge. **Mats** -$7,500 Donation (provides 150 mats) In appreciation of this sponsorship, the donor's name or logo will be printed on each mat that is given out to teams. **Practice Materials**- $3,000 (provides 150 practice sets) In appreciation of this sponsorship, each practice set of materials will be labeled with the donor's name or logo.)

DONATE ONLINE

Tournament Playing Field Construction and Maintenance - $6,000 To keep students challenged and excited, the theme challenge is new each year. BEST & FIRST Tech Challenge require new playing fields to be constructed each year to reflect the technical specifications for each challenge. In appreciation of this sponsorship, the donor's name or logo will be displayed on or in close proximity to the tournament fields.

DONATE ONLINE

Tournament Ribbons and Trophies - $2,800 To celebrate a job well done, winning teams are awarded with ribbons and trophies reflective of their team's placement in each tournament's final standings. In appreciation for this generous donation, the donor's name or logo will be displayed on or near the tournament's award table and a public acknowledgement given prior to the start of the award ceremony.

DONATE ONLINE

Food and Refreshments for Volunteers - $1,500 Volunteers make our student tournaments possible. Whether they are setting up or breaking down the tournament site, acting as judges, scorekeepers, or monitors, each volunteer is giving of their time and energy to work on the behalf of children. Many of our volunteers arrive before the tournament starts and stay well after it is over finishing up their jobs. Providing volunteers with a light meal, beverage, or snack enables them to eat without having to leave the tournament site and is a simple thank you for the BIG job they do. In appreciation for this generous donation, the donor's name or logo will be displayed in the tournament hospitality room.

DONATE ONLINE

Robotics Fieldtrips - $2,000 Each year, hundreds of students from across the South Plains visit the Texas Tech Whitacre College of Engineering with their classroom teachers and are treated to robotics focused fieldtrips. Students participate in hands-ons robotics activities such as building a robot, programming and running building a robot, programming, running the program. While on campus, students are able to experience the Texas Tech University culture and explore campus life. In appreciation for this generous donation, the donor's name or logo will be included in the training presentation.

DONATE ONLINE

Teacher Professional Development - $1.200 Providing teachers and coaches with the knowledge necessary to support their students is a crucial component to student success. In appreciation of this sponsorship, the donor's name and logo will be included in the training.

Why Support Robotics Programming?

- Students Acquire Science, Technology, Engineering and Mathematics Knowledge and Skills
- Students Acquire 21st Century Skills
- Helps Keep Our Talent Local
- Encourages Participation From Historically Underserved Populations

Impact

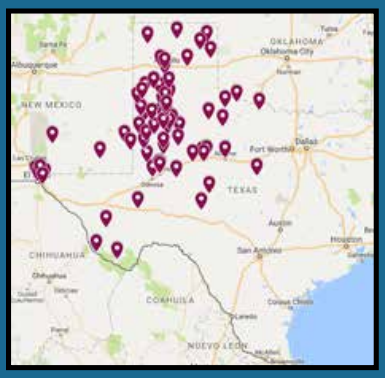
Our Students
2,009 K-12th students served in the past year. 33% female and 48% minority

"I was afraid to do robotics because I thought it would be really hard. It was REALLY hard, but I learned so much. I did things I never thought I could do."

Student

Program Participation

96 School Campuses
67% Low Socio-Economic Campuses served
62 School Districts
2 Home School Organizations
7 Private Schools
10 4-H Clubs
5 Boys and Girls Clubs
1 Girl Scout Troop



"One of my students has special needs. He struggles academically and hardly ever smiled until he started robotics. He is so happy when he is working on the team's robot. Now his grades have improved, he smiles and looks at his robot and says, "I did that!"

Robotics Teacher

Our Volunteers

190 Volunteers and 2100 volunteer hours in the past year.

"I just love it! The kids are so exited. Their eyes just light up."

Volunteer

Our Mentors

35 TTU Engineering Student Mentors and 525 mentoring hours in the past year.

"I didn't do anything like this when I was in school. I wish I had. I come from an agricultural town. This shows kids options for their futures."

Mentor

PROGRAMS

GEAR

BEST

FIRST TECH

SUPPORT

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