



ROBOTICS CLUB
FIRST TECH CHALLENGE Team 14584
Catalina Foothills High School
4300 E. Sunrise Drive
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Industry professional and App Development Instructor at Catalina Foothills High School
Mark Hays
IBM software engineer, retired

What inspires the PIONEERS?

We are students on a mission. Last year, we started a *FIRST Tech Challenge* (FTC) robotics team to fill a hole in our high school's instructional and extracurricular program and our lives. All of us had been involved in *FIRST (For Inspiration and Recognition of Science and Technology)* international competitions using LEGO robots in our elementary and middle school years, but there wasn't a path to participation in the FTC engineering design and advanced programming challenges that inspire thousands of high school teams worldwide to learn, innovate, and excel every year.

We started a pilot program with the belief that the best way to learn was to "just do it." We had a shoestring budget because as a pilot program we were ineligible to seek sponsorships. We did most of our work in an unheated and uncooled garage spending nights and weekends figuring out the many ways *not* to build or command a robot. In spite of the constraints, we won awards for our innovative thinking, autonomous programming, team service and community outreach activities and placed in the top 4 at three of the Arizona-New Mexico regional qualifying tournaments.

To do so, we worked long hours and taught ourselves. We made in-the-moment strategic decisions and recovered from system failures and design flaws. Recognition of our achievements and the power of the FTC experience to inspire passion for collaborative problem-solving, the drive to excel and choice of educational choices and career paths in STEM fields led to the establishment of *Pioneer Robotics* as an official high school club this year.

Our goal is to expand our program to field a team for the 2019-20 FTC challenge season with the creativity and expertise to be leaders in our region and at the world level. We hope you, too, will be inspired by our proof of concept and be among the business leaders worldwide who support the development of youth skills through the FTC program. Continuing sponsors see the value of innovative and critical thinking, collaborative problem-solving and hard work in the formative high school years. We welcome the opportunity to work with you and learn beyond our school days to meet this year's FTC engineering and programming challenges.



What are the challenges for the PIONEERs?

It takes human and financial resources to compete in FTC. Our team needs adults who can provide expertise and guidance in mastering code for complex autonomous operations and finding engineering solutions. We also need materials, tools and support for building and custom fabrication. It takes innovative design and versatile components to compete at a higher level.

In addition to the vital role of people who believe in fostering STEM skills and youth talent, we need the funds for materials and travel to qualifying tournaments which are vital to the FTC experience. Having sponsors ensures that participation is accessible to all students. It connects our work to the careers and people in the real world of product design and marketing, software engineering, business development and corporate and community leadership.

Beyond hard work, our pioneering ethic includes service to others. All of us actively promote STEM learning for younger students by helping with our district's robotics and FLL programs. We serve as mentors to *FIRST LEGO LEAGUE* teams and as expert judges and referees at regional and state tournaments. Our skills in robotics were requested by the *Arts Express* youth program and we created an animatronic character for their summer production.

This year, in addition to mentoring and volunteer activities, we are responding to the challenge of helping a young visually impaired student fully participate in her class robotics experience. We are investigating hardware and developing software interfaces to allow her and other visually impaired students to program LEGO robots. Your support of STEM learning through *Pioneer Robotics* benefits the entire community.



Why PIONEER with us?

Sponsoring an FTC team is an investment in us and in the future. All over the world those who support youth in discovering a passion for engineering design, programming, collaborative problem-solving and service see the payoff in their educational and career choices and professional and community leadership. This year, three of our founding members are continuing their learning in college engineering and computer science programs. All of us are inspired to work on assistive technologies and in programs that will help young students develop STEM skills.

FTC sponsorship creates relationships that change lives. The personal connection between the team and the people who support them creates a lifelong bond. Those who give youth the opportunity to discover their skills, talents and interests are the ones who are remembered and the role models for our future selves. Your involvement and feedback will help us become the employees you want to hire.

Recognition of the role sponsors play in supporting this student activity is a responsibility that we take seriously. STEM learning is highly valued in and beyond our community, and we will work with you to publicize your support. Last year, FTC tournaments involved thousands of students, their parents, coaches and supporters and included teams from across Arizona, New Mexico, California and Colorado. In addition to advertising reach, sponsors may be eligible for state tax credits and tax deductible donations at the federal level.



Will you lead the way?

Last year, we were able to prove the value of *FTC* participation to ourselves and others. We were creative and resourceful in teaching ourselves enough to earn a place at the Arizona-New Mexico championship tournament. There we saw the expertise and ingenuity it takes to be the best.

We want to be the best, too. We know that the skills will help us become leaders in our educational and career paths. Will you help us set the standard this year and continue to inspire future Pioneers in our community?

There are several ways you can contribute as a corporation. You can encourage employees to donate their time in mentoring our team, allow access to specific tools, and provide the financial support needed for *FTC* competition and an extracurricular program with a proven record of inspiring passion for STEM learning and hard work.



Mentors and In-kind Contributions

Our need for expertise, materials and access to specialized equipment for fabrication provides opportunities for individuals who are interested in being involved in teaching and mentoring our students. No matter how much time you have to give, we welcome and appreciate your knowledge and skills, and will work with you to find the right opportunities to contribute.

Needs	Description
CAD design expertise	Help students use CAD tools to implement and test ideas virtually
Marketing and finance guidance	Advise team on sponsor appeals and recognition
Website development	Assist team with setup and management of a website for club and team outreach
Programming skill development	Work with team members learning to use Android Studio, multiple sensors for navigation and Tensor Flow for object recognition
Parts, materials, and access to tools for fabrication	Participate in the robot design and problem-solving process to encourage out-of-the-box thinking

Financial Support

The annual cost of participating in *FTC* competition is substantial. There are set participation fees, parts specific to the game challenge, materials for the outreach and service projects, and travel to tournaments that must be paid for. This year, as a new team, we also need to acquire our own set of tools and expand our supply of structural and electronic components for building our robot.

The funds needed are far beyond the income that can be generated by student membership fees. These must be kept low to ensure accessibility to all. Any donations or sponsorship amounts above the annual expenses will provide continuing program support and more opportunities for student participation and learning.

Sponsor Support Levels

All contributors of time, materials, and financial resources will be recognized on the team website and in displays at tournaments and team events. The team will work with sponsors, donors and mentors to provide pictures and articles for public relations and media distribution. Large banners (33x86") acknowledging sponsorships are suggested for display at tournaments, but we will work with organizations to provide them with the type of recognition they desire. Tournaments, which are live streamed, draw teams from across the state and southwest region with from 750-2000 in attendance.. *FIRST* World tournaments usually receive national media coverage and are live streamed worldwide. Attendance is the tens of thousands.

Recognition of Support - Logo/ Banner Sizes

\$2500 +	Trailblazer - Half size corporate display on banner
\$1000 - \$2499	Pathfinder - Quarter size corporate display on banner
\$500 - \$999	Pacesetter - Eighth size corporate display on banner
\$100 - \$499	Guide - Corporate logo and listing on banner
\$50 - \$99	Scout - Corporate logo and listing on team materials

The team will provide full accountability for and documentation of all contributed resources. In addition, sponsors and contributors will receive team updates and invitations to team events and tournaments.

PIONEER Budget 2019-2020

Income	
Student Club Membership Fees	\$750.00
Fundraising	\$1,500.00
Sponsorship	\$5,000.00
Total Income	\$7,250.00
Expense	
FIRST Registration Fee	\$275.00
Tournament Registration Fees	\$325.00
Game set	\$400.00
Service and Outreach	\$750.00
Parts	\$1,700.00
Hand Tools	\$600.00
Uniforms	\$580.00
Travel (transportation to 1 tournament in Tucson, 2 tournaments in Phoenix, and possible 3 day trip to State tournament in Flagstaff)	\$2,420.00
Miscellaneous	\$200.00
Total Expense	\$7,250.00

Program Development

In moving forward, our goal is to add equipment that will contribute to the broader development of the engineering and computer science programs at our school. Acquiring equipment for a shared engineering lab will enable more diverse hands on experiences and the real world applications that are vital to the learning process.

Engineering lab equipment	Cost
CNC Router	\$1,499
Lathe/Mill	\$4,578
Band Saw	\$207
Workbench	\$390
Vise	\$105
Arbor Press	\$60
Shelving	\$160



Yes, we'll be PIONEERS, too!

Business Name:

Contact Person:

Address:

City:

State:

Zip Code:

Phone: ()

Email:

Business Website:

(Please print or type so that we can accurately include your information)

Please make checks payable to: CFHS Pioneer Robotics

Federal EIN:

Please mail to:

Pioneer Robotics
Catalina Foothills High School
4300 E. Sunrise Drive
Tucson, AZ 85718
Attn: Gianluca Tenino, Treasurer

Amount Donated:

Check #:

Cash

Material Donation:

Thank you for your support of PIONEER Robotics!