

***FIRST* Impact Award - Team 5587**

2024 - Team 5587
Team Number
5587
Team Nickname
Titan Robotics
Team Location
Alexandria, VA - USA
Describe the impact of the <i>FIRST</i> program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in <i>FIRST</i> programs as mentors/sponsors.
Titan Robotics fosters an environment of technological education & innovation. 100% of our alumni have graduated from high school to attend college. 20 alumni have gone on to mentor FIRST teams and volunteer at FIRST events. Our alumni network has helped many graduates take part in professional opportunities at companies such as Google, NIH, & SpaceX. 80% of alumni pursue degrees & careers in STEAM, & 80% of former members share that Titan Robotics positively influenced their career decisions.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Alexandria City High School (ACHS) educates nearly 5000 students from 119 countries speaking 121 languages. 63% of students qualify for free/reduced lunch, so we partner with local restaurants to provide free meeting meals to team members. We also translate our marketing materials into Spanish, with plans to add more languages. By offering scholarships for our summer camps we ensure that every student has equal access; 70% of campers attended on full scholarships last summer.
Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?
The Titan Robotics Coalition (TRC), a STEAM community pipeline, is dedicated to supporting our 21 FLL & FTC teams through mentoring and funding. 61% of Alexandria City Public Schools students have access to a FIRST team. We annually host 7 STEAM summer camps that taught 65 students last year. Last season, we participated in and helped coordinate 29 outreach events. This year, we improved our member recruitment and retention strategies resulting in a 33% member increase compared to 2023.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
Titan Robotics students are role models prioritizing student leadership through mentorship and teaching. Members have spent over 400 hours supporting and developing our STEAM pipeline. We host an annual FLL scrimmage for local teams where team members teach younger students to participate using

Gracious Professionalism & Coopertition. Titan Robotics seeks every opportunity to make an impact in both our local and FIRST community through outreach events, educational initiatives, and summer camps.

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

In 2023, we restructured our K-8 team system to improve autonomy & sustainability for the teams we founded through the TRC. Over the past 3 years, we founded & fostered 21 K-8 programs. As mentors, we visit teams to engage and inspire students in STEAM. To further support these teams, we founded a grant program to teach students grant writing. We awarded \$7,000 in need and merit-based aid dispersed among 5 teams. We also assist other FRC teams in founding their own FLL & FTC pipelines.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

Every year we host summer camps covering a variety of STEAM subjects to engage excited local students in grades K-8. AIM-AHEAD, an NIH-funded consortium, helps us offer free middle school camps, and provide a one-of-a-kind Health Sciences summer camp. This year we hosted a book drive to gather materials for our new STEAM Little Free Libraries that will provide books & take-home STEAM kits. Titan Robotics' community presence allows us to inspire others to explore STEAM.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

Titan Robotics is supported by 15 organizations. Some of our partnerships, such as those with the Campagna Center & AIM-AHEAD, have been imperative to making our summer camps accessible & educational. In 2023, we began our partnerships with LGBTQ+ of FIRST & Neurodivergent of FIRST to uplift marginalized voices in the STEAM community & provide educational resources to other FIRST teams. We also founded the NoVA Alliance, a coalition of FIRST teams within Northern Virginia to share resources.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

Equity & diversity are prioritized at Titan Robotics with a "No Cuts, No Fees, No Experience Required" policy for all students on our team. "No Fees" includes all food, travel, & lodging expenses. In the past two years, we have improved our summer camp accessibility with free & scholarship-based camps. In our partnerships with LGBTQ+ of FIRST & Neurodivergent of FIRST, we reach out to hosting teams to ensure access to gender-neutral bathrooms & quiet areas at competitions.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

Extensive documentation & training efforts help to ensure the sustainability of our team. During our off-season competition, Bunnybots, the robot is built entirely by underclassmen to foster skills & confidence in all members. Leadership guides, which are updated yearly, provide advice, guidance, and knowledge from previous subteam leaders. Our 501(c)(3) board and team president collaborate to form a budget that ensures team stability and sustainability while teaching valuable business skills.

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

Updated & in-depth sponsorship packets, as well as utilizing our connections & network, helps us build relationships with companies. We involve our sponsors at every level, inviting them to open houses, community events, FLL programs, & competitions. We thank our sponsors by creating social media posts & sending letters of appreciation. We constantly seek out mentors to strengthen our team, such as mentors from Raytheon and BAE who provide us with valuable advice & insight.

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

We want to improve student mentorship within FLL and FTC teams in our district. We maintain contact with all our teams and remain a virtual resource. Currently, two student mentors attend meetings at a local middle school that hosts a coalition of FLL teams. We would love to extend mentorship to more teams. However, we are limited by transportation issues, number of members, and schedule conflicts. The Campagna Center has offered incentives for student-mentors for next season.

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

With our goal of focusing on the artistic aspect of STEAM this year, we have begun to write, illustrate, & publish a physics-based children's book. We are also introducing our STEAM kits, which will be placed with books in our Little Free Libraries. We submitted the Digital Animation Award for the first time this year and our marketing team solidified online branding. Titan Robotics inspires young people to be science & technology leaders & innovators through outreach events & summer camps.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

Titan Robotics has built a meaningful relationship with our community. We are widely known as a resource for local schools, companies, & organizations. Students are encouraged to try out every subteam & run for the democratically elected leadership positions at the end of the season. Team traditions like family-style dinners, tutus at competitions, & the Honeyroast, an annual event where students compliment their peers, help create a sense of belonging within Titan Robotics & FIRST as a whole.

Judge Feedback

Who/When

Feedback

Apr 06,
2024
08:42:53
AM EST

What areas would be most important for our team to focus on to prioritize our growth and improvement?

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

Our Mission

Titan Robotics Team 5587 was established in 2014 and has since inspired young people to be leaders and innovators in science and technology. We are located in Virginia's largest and Alexandria City's only public high school - Alexandria City High School (ACHS). ACHS hosts a diverse group of students from 119 countries speaking 121 different languages. Over the past 10 years, by focusing on STEAM education for every grade level, we have proved ourselves to be an essential resource for Alexandria City Public Schools (ACPS). Our team embraces the principles of inclusion, equity, and accessibility. Our "No Cuts, No Fees, No Experience Required" policy removes barriers to entry and has allowed our team to grow to 62 members, 48% of whom are rookies. Students are encouraged to explore the Technical and Operations subteams to discover areas they are passionate about. At the end of every season, we hold elections to choose student leadership positions for the next season, which creates an opportunity for any member to become a leader. This season, 58% of our leadership team are non-male students, and 46% of our team members are part of the LGBTQ+ community. At Titan Robotics, our mission is to conduct STEAM outreach throughout our community and inspire students through real-world skills and experiences through a competitive, student-led FIRST team. We take advantage of our unique community through our partnerships and outreach, and we are dedicated to making STEAM accessible and welcoming for everyone, regardless of race, gender, or socioeconomic status.

Community

Our 15 corporate sponsorships help us maintain our "no cuts, no fees, no experience required" policy by funding our team expenses; nine of these partnerships are returning donors. This year, Titan Robotics continues our partnership with Building Momentum, a local STEM training and education company and makerspace. Since 2020, they have provided us with mentors, shop space, tools, student employment, and funding, enabling us to grow as a team. In addition to our corporate sponsorships, Titan Robotics partners with other FRC teams to connect and share resources with a larger community. Last year, Titan Robotics founded The NoVA Alliance, a coalition of teams from the Northern Virginia area, with SuperNOVA Team 4472 and Koibots Team 8230. We have participated in multiple joint outreach events through this alliance, including the Institute for Defense Analyses Science Unrestricted event and the Society of Hispanic Professional Engineers' Noche de Ciencias. These partnerships have strengthened our relationships with the broader Northern Virginia community, allowing us to impact and inspire more people to pursue an interest in FIRST, robotics, and STEAM. In the fall of 2023, we hosted a drive to collect books for our Little Free Library (LFL) Initiative. We accepted books in all languages to ensure every student will be able to find a book they can enjoy. As part of this program, we have built two LFLs to establish at local elementary schools and supply resources to maintain an existing LFL. The little libraries allow us to support underserved communities by distributing STEAM kits and books. One of the STEAM kits we have provided is a physics kit to complete an activity demonstrating the Magnus effect. The kit contains all the necessary materials for the activity and directions in multiple languages. This project allows us to impact at least 1400 students among the three libraries. In 2023, Titan Robotics joined LGBTQ+ of FIRST at the Silver Tier. We work with them to provide brochures at competitions and events, in both English and Spanish, on how to make robotics a safe space for LGBTQ+ students. This year, we began working with FRC teams hosting competitions to ensure gender-neutral bathrooms are available at FIRST events. We have also partnered with Neurodivergent of FIRST to ensure quiet rooms are accessible to those who need them. One of our most important partners is AIM-AHEAD, an NIH AI/Machine Learning non-profit consortium working to increase the representation of minority groups in health science-related fields. We began our collaboration with AIM-AHEAD last year by hosting a middle

school-based health sciences STEM club. We continued our partnership last summer by creating our Health Sciences summer camp, which utilized their \$1.2 million grant to access AR technology, the Immersive Learning Center, and free camp tuition. We are looking forward to hosting again this summer.

Outreach and K-8

Our first priority at Titan Robotics is engaging our community through robotics and STEAM. Since 2022, we have founded and fostered 21 FTC and FLL teams in our city. We worked with AIM-AHEAD to establish STEM clubs at every ACPS middle school. They also sponsored our middle school summer camps, making them free for all participants. This year, we awarded a record number of camp tuition scholarships to our elementary-aged students where 70% of our campers paid \$0 in fees. In the past year, Titan Robotics has participated in or coordinated 29 outreach events to introduce STEAM to our community. One of our largest events is Art on the Avenue, a local art festival in Alexandria that attracts over 40K people annually. At the event, we distributed STEAM kits to children and shared resources about FLL & FTC teams and our summer camps. At the Alexandria District event last season, we earned the Hydrogen and Fuel Cell Technologies Office (HFTO) Young Innovator's Award from the U.S. Department of Energy (DOE) for our innovative outreach strategies. We were also invited to attend the DOE's HFTO Annual Merit Review. At the event, we introduced FIRST Robotics to attendees to inform them of ways to implement FIRST in their communities. We also work extensively with the schools in our district to attend local STEM nights and PTA meetings. At PTA meetings, we present our outreach and K-8 efforts to champion for increased STEAM resources in our community. After the pandemic shutdown, we realized we would have to focus on rebuilding our network of K-8 robotics teams. Titan Robotics has continued to foster STEAM exploration through the 21 FLL and FTC teams we have founded, supported, and maintained since then. These teams create a pipeline promoting student access to FIRST from kindergarten through 12th grade, inspiring them to pursue post-secondary STEAM majors and careers. Team members visit and mentor our FLL teams at George Washington Middle School weekly. We act as mentors, visiting the teams to help students pursue an interest in STEAM through robot development. We run their annual mock competition, with Titan Robotics members volunteering as referees, judges, and event staff. We host seven STEAM-themed summer camps each year for kindergarten through 8th-grade students. These camps focus on various subjects, including physics, rocketry, robotics, and Java programming. Our camps' affordable costs and interactive curriculum provide accessible, hands-on summer learning opportunities to students. This year, our elementary school camps are run in partnership with the Campagna Center, a local non-profit organization providing education and social development programs for our community's children, teens, and adults. Over the past two years, the Campagna Center employed three Titan Robotics students to help establish FLL teams in their after-school programs at four different ACPS schools. This summer, they have offered to pay our summer camp counselors, allowing more students to become STEAM mentors and leaders. This employment opportunity allows students, who may not have otherwise had the ability to volunteer their summers, to gain work experience and help support their families financially, inspiring students to pursue STEAM careers. In 2024, we are authoring and illustrating a children's book as a fun and unconventional effort to provide STEAM education. Our children's book focuses on introducing basic physics principles to children in a joyful and easy-to-understand format. We created the characters Timothy and his friend Dot, who have an amusement park adventure and discover the fundamentals of simple machines. We plan to donate copies to each Alexandria City and school library, place them in our Little Free Libraries, and host local read-aloud events. Finally, this year, we were proud to announce the Titan Robotics Coalition (TRC), which exists to support our K-8 FIRST team initiatives. We established a grant program that provided nearly \$7000 in funding to local FLL and FTC teams to assist with equipment and registration

fees. We created a grant application that K-8 students can complete independently. The application asks about specific materials needed, the cost, and the purpose. These grants allow students to develop vital operational skills, promote team autonomy, and ensure sustainability.

Our Future in FIRST

Over the past three seasons, Titan Robotics has experienced immense growth and success. We want to advance our outreach efforts to remain a dynamic team prioritizing community engagement and accessibility. In the coming seasons, we want to re-establish our virtual outreach and have FLL and/or FTC teams in every ACPS school. Our virtual outreach program is a continuation of the YouTube video series that we produced during the pandemic. This will allow us to continue to serve as a resource for other FIRST teams and widen our reach beyond our community in Alexandria. We will continue our partnership with the Campagna Center to expand FLL and FTC teams into elementary and middle schools and support these teams through student mentorship. Through FIRST, we have inspired a future generation of innovators and leaders in STEAM who will continue to break down barriers, creating an environment fostering creativity, inclusivity, and learning from a young age. ;

