

Chairman's Award - Team 1403

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2022 - Team 1403

Team Number

1403

Team Nickname

Cougar Robotics

Team Location

Skillman, New Jersey - USA

Describe the impact of the *FIRST* 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 *FIRST* programs as mentors/sponsors.

The FIRST program has had a meaningful impact on our team participants by introducing them to STEM skills that they use daily, even after high school. Over the last 3 years, 100% of our alumni have graduated and attended college. 85% of them have pursued careers in STEM and 11 currently mentor FIRST teams, carrying on the lessons that they learned from 1403. We constantly keep alumni engaged through the network that we built in 2020, which involves a monthly newsletter with team updates.

Describe your community along with how your team addresses its unique opportunities and circumstances.

Team 1403 focuses to have a large impact on our community through various initiatives. For the past 8 years, the team held annual food and toiletry drives to give back to our community in need. This year alone, we have donated over 800 items. We landscaped around our school's campus last Earth Day through weeding, mulching, and picking up trash. We have assisted 3 Eagle Scout Projects within our school district, including 2019 where we dedicated a total of 88.5 hours.

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?

To effectively spread the FIRST message, we host presentations on topics such as bumpers, gears, and women's journeys throughout STEM-related fields. Middle school FLL members that we mentor join Team 1403 when they enter high school and even some from our summer programs sign up. In fact, 54% of our leadership consists of FLL alumni. Through the use of social media, we are able to push out STEM-related content to a larger audience, and our most recent Instagram reel amassed over 5,000 views.

Please provide specific examples of how your team members act as role models within the *FIRST* community with emphasis on the past 3 years.

To assist other teams, we have published resources on our website, such as the Cougar Script Editor and Belt and Chain Calculator. This year, our Strategy Subteam published a resource that optimizes robot strategy based on teams' robot specifications. At competitions, we set up a professional backdrop in the pit that showcases our team and initiatives. We also have a team contract and code of conduct that outlines member expectations and requirements for a varsity letter.

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

Team 1403 has mentored FLL Teams 26361 and 26362 for the past 6 years, including 1690 hours over the last 3 years. We have helped 26362 qualify to compete for the Global Innovation Challenge for the past 2 years. This year, we mentored Girl Scout FLL Team 50704. In addition to local FLL teams, we also help FRC teams. Due to Hurricane Ida, FRC 303 was in need of equipment and a workspace. We invited them into our robotics lab, trained their members, and provided them with necessary resources.

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?

Team 1403 has volunteered at the SOAR summer program for 12 years, local middle school LEGO recreation program for 2 years, Science and Invention Convention for 6 years, and Family STEM nights for 3 years. With these programs, we were able to lead students through the foundations of STEM education and watch their interests grow, fostering a new group of students interested in becoming members of Team 1403 and pursuing STEM careers in the future.

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

We partnered with the Rock Brook School to teach special education students about LEGO NXT and Scratch Programming for 3 years. This partnership has allowed us to provide STEM education to those who don't have the same opportunities and abilities. This year, we have given back to our largest sponsor, our Board of Education, through video projects such as a virtual high school tour and school celebration videos. Annually, we give a presentation to our Board of Education on our team's progress.

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

Biannually, we host Women in STEM events where women working in STEM fields participate in a panel discussion to inspire young women. In 2020, we held virtual Women's Tech nights; meetings where female leadership presented on technical skills. Team 1403 hosts Culture Cougar Classes annually where students present about their heritages. During COVID, we partnered with the Montgomery Special Education PTA to hold a virtual summer camp and promote inclusion for students with special needs in STEM.

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

Team 1403 is sustainable through standard operating procedures and subteam standards. We use lesson plans and curriculums to ensure that vital team knowledge is passed on, even after captains graduate. Documentation from our Kickoff and The Compass Alliance Workshops is also available on our website to other teams to ensure that our *FIRST* community is able to run effectively. This year, we also posted video tutorials that cover safety and machinery instructions.

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

Many of Team 1403's sponsors provide us with funding and in return, the team purchases machinery that is used by both the team and high school engineering classes. Our sponsor Picatinny Arsenal holds an annual Women in Engineering event that many female 1403 members attend. Our sponsors also participate in our Women in STEM panel and speak at our Montgomery District Event. We proudly display our sponsors on our team shirts, robot, and pit backdrop.

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

A big area of improvement for Team 1403 has been to integrate newer members successfully into our large team. Our Big Cougar Little Cougar initiative promotes inclusion by pairing new members (Little Cougars) with a returning member (Big Cougars) through tasks, such as introducing Little Cougars to other members and forming friendships through activities outside of school. We decided to iterate it this year by introducing meetings where all the pairs participated in team-building activities.

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

1403 fulfills the *FIRST* mission through The Compass Alliance (TCA), a global partnership of teams, to create an international impact and help other teams in need. With TCA, we have published 52 video and 10 written resources. 1403 is involved with the call center, help hub, and service station initiatives that offer assistance to teams at competitions. We have created 7 of 15 TCA resources published on the *FIRST* website. May to December, we meet bi-monthly with the TCA for publishing resources.

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.

Team 1403 strives to promote mental health, diversity and inclusion. One way we promote mental health is having our school psychologist present at a Cougar Class to 81 members. Diversity is reinforced by the 18 cultures within our team,

FRC 3132's Australian culture and 4481's Dutch culture, all presented at our Culture Cougar Class. We foster an inclusive environment by dedicating 271 hours to provide STEM education to students with special needs and 3611 hours mentoring the younger generation.

Essay

Intro

A common saying on Team 1403 is that we are a "small business working to produce a final product." That final product is not just a robot, it is a legacy that sustains the transformation of STEM culture across our school and global community. This season, we have spent over 8500 hours building upon this legacy, driven by our 3 team pillars: family, dedication, and quality.

Team

Team 1403 consists of 107 members across 9 subteams. These subteams are led by 20 captains, overseen by 4 Managers and 2 Team Captains. Our family also includes 18 mentors that attend our meetings, 6 of which are FIRST alumni.

Despite the difficulty caused by COVID, 1403 has met in person since October 2020 safely due to strict social distancing, sanitizing protocols, and contact tracing. We continue to use our 5 stage safety procedure from last season, reinforced by technology such as UV lights and a fogging machine to sanitize our work space.

During preseason, we host 5 unique Cougar Classes that teach team members valuable life skills such as the Engineering Design Process, Business Etiquette, Culture, and Mental Health. This year, we invited our school's Principal and Vice Principals to experience our team atmosphere. We had our school psychologist present about managing mental health and invited FRC 3132 and 4481 to present about their cultures.

To reach an expansive audience, we use our social media to post about the team's updates, sponsors, and outreach. We have a total of 2921 followers that we engage with on a frequent basis through our social media accounts. This season, we implemented Linktree to serve as a centralized hub for team resources. Our website is regularly updated with information on our team's events and access to our resources.

During Saturday build season meetings, members play Kahoot! quizzes during food breaks focused on FIRST and 1403 trivia, fostering new friendships and relieving stress. Since 2019, our leadership has held bi-weekly meetings across the globe with FRC 3132 during the build season, discussing robot progress.

Since 2015, 172 Varsity Letters have been earned in accordance with the requirements highlighted in the team contract.

We maintain a relationship with sponsors by staying engaged with them through social media and community events such as Picatinny Arsenal Women in STEM and the Montgomery Board of Education presentations. Our list of sponsors includes the Montgomery Board of Education, A&K Equipment, Integra LifeSciences, Verizon, Google, Slalom, Johnson & Johnson, Department of Defense (DoD STEM), Picatinny Arsenal, and Bristol-Myers Squibb.

Team 1403 engages with its members even after they graduate. Throughout our team's existence, we have tracked and communicated with 255 alumni, 11 of which are involved in FIRST. We update alumni on our ventures through our monthly newsletter network, the Cougar-Catchup.

Outreach

This season, we safely hosted our 16th annual FIRST Skillman Kickoff event and brought back our most impactful workshop, Women in STEM, which highlights women's journeys through their STEM careers. We have held a total of 9 Women in STEM events, 4 at the Skillman Kickoff event, 4 at the Montgomery District Competition, and 1 virtually last year.

This year, we held our 8th annual toiletry drive in collaboration with the Montgomery Food Pantry to collect 839 items, aiding our community in need. We also had our subteams participate in a healthy competition to donate the most amount of items.

During the 6 years that we have been involved in our district's Science and Invention Convention events, our members volunteered to judge middle school students' projects and showcased our Family STEM Night booth, which included demonstrations of our virtual reality technology and VEX robots.

Over the summer, our team mentored special education students to enrich the local community. Adapting to the pandemic, we partnered with the Montgomery Special Education PTA to hold a virtual camp that introduced programming to students using VEXCode VR. Team members volunteered to lead the initiative, devoting over 100 hours to provide STEM education to those that don't have the same access as others.

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For over 3 years, members volunteered at the Rock Brook School of Skillman NJ, teaching students with special needs about engineering and programming through LEGO NXT Robots. We also helped the students conduct science experiments, encouraging them to pursue STEM related fields in the future.

In 2019, Team 1403 volunteered at Go Baby Go, a program that brings mobility to children with disabilities through custom toy cars, created by the Cerebral Palsy Foundation. We have stayed in touch with the foundation and are waiting to resume after COVID.

During the 2019-2020 school year, 12 of our members worked together to assist a team member in obtaining the Eagle Scout Rank. The project was an outdoor learning environment at our local elementary school, which has helped the younger students learn in an interactive setting.

Over the last 12 years, our members volunteered for our annual SOAR summer camp program at our school using LEGO Spike robots, purchased by Team 1403. This year, members mentored students ranging from 2nd to 8th grade for 3 weeks, accumulating 545 hours helping build and program the Spike robots.

We have mentored FLL Teams 26361 and 26362 for the past 6 years for a total of over 3000 hours, and for the past 2 years, 26362 has qualified to Worlds for the Global Innovation Award. Due to COVID, we mentored them both in-person and virtually for 170 hours. This year, we also started mentoring the Girl Scout FLL Team 50704 in-person.

Following Hurricane Ida, we reached out to FRC Team 303 who had lost most of their equipment as a result of the flood, and invited them to work in our robotics lab. Through in-person demonstrations and tutorial videos, we trained them on procedures for using our equipment. We supplied them with necessary materials, including batteries and tools as well as access to machinery. By sharing our workspace with 303, our members had the chance to meet and bond with students from a different team.

Team 1403's drone was used to make numerous videos for our school. Before the start of this school year, the A/V Subteam spent 77 hours creating a virtual high school tour for our incoming students. This video was also used to train local police officers for teaching the layout of our high school for possible emergencies.

Team Sustainability

To maintain sustainability, our subteams made lesson plans to support future leadership. For consistency, the main topics taught yearly are outlined in our standardized curriculums. We continuously update our Standard Operating Procedures and Subteam Standards. This not only allows us to be more efficient with our work, but also ensures uniformity throughout our team.

One of our largest initiatives during the past two seasons was creating instructional videos for the team. These videos review safety and operation of machinery for all members to learn from.

During the 2020 preseason, we introduced the Big Cougar Little Cougar initiative, which focuses on forming bonds between veterans (Big Cougars) and new members (Little Cougars). The initiative gives new members a smooth transition into the Team 1403 family. Big Cougars and Little Cougars participate in meetings facilitating critical thinking and teamwork.

We also have our own internal resources which are accessible to the team, such as tutorial videos, which give team members insight on the usage of various equipment. This year, our Strategy Subteam created a new app and a FMA database to scout teams in our district and pick the optimal alliances during competitions.

TCA

Team 1403 is a founding core member of The Compass Alliance (TCA), an alliance of 10 teams across the globe that aims to be a "one-stop shop" for all things FIRST. We work closely with all the teams in TCA.

In the fall of 2019, we held TCA workshops that were attended by 18 teams. This past year, we recorded our workshops, allowing others to view virtually due to the pandemic. The workshops ranged from CAD, programming, and wiring. We have also published 62 resources, consisting of 10 written and 52 videos.

TCA offers an international call center, a centralized resource for any team to reach out for help. This call center is facilitated by members of 1403 in collaboration with other TCA teams. Recently, we developed an Online Meeting Resource that had been posted on the official FIRST website. This resource was essential during the pandemic and highlighted important safety protocols for in-person meetings.

FIRST

Team 1403 has hosted 5 FMA Montgomery District Events, consisting of 38 competing teams per year, supported by a total of 100 volunteers varying from alumni, team members and the community. Team parents have volunteered by running food concession stands, our largest fundraising event.

This year, Team 1403 hosted the 16th annual Skillman Kickoff event, where many FIRST teams come together to watch

the game reveal and celebrate the start of build season. We were excited to return in-person, following COVID procedures, since last year's kickoff was virtual. Over 30 teams joined us to participate in our workshops consisting of Pneumatics and Linear Motion, Bumpers, Cougar Script Editor, Women In STEM, Autodesk Inventor, and Gearboxes. Additionally, we introduced a new workshop on our latest resource, the Cougar Script Editor, which helps teams easily program their robots through the autonomous stage of the game. Kickoff also serves as a hub for game kit distribution.

At Team 1403, we learn from the past, work in the present, and plan for the future. Previously, our alumni laid a foundation that our team builds upon. Presently, we create our impact on a local and international level. Ultimately, we sustain the future through our commitment to the inspiration of future STEM leaders.