

Chairman's Award - Team 3216

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2021 - Team 3216

Team Number

3216

Team Nickname

Missoula Robotics Team (MRT)

Team Location

Missoula, Montana - 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.

FIRST's impact on our team is extensive. Every team member has graduated from high school, most attend college, and many pursue STEAM-related careers. FIRST inspired one of our past members to become a computer science teacher. Another past member received a degree in computer game design and works for Rockstar Games, a leading game design firm. Team members mentor area FLL teams, and past team members return as team mentors. Wherever our students go, they carry FIRST's core values with them.

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

Community is extremely important. We foster a space that is creative, knowledgeable, inclusive, and passionate. Last year, we volunteered at our local food bank to help assemble EmPower Packs for students in need. This year, we had the opportunity to exhibit our robot at a regional car show at our local mall. Missoula is very supportive of student organizations. For example, we have partnered with many local restaurants for community nights where a portion of sales are donated to the team.

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 team has participated in many local outreach activities. Our team has appeared at local basketball games with Timmy, our t-shirt shooting robot. We also participate in local craft fairs and do outreach there. The team also brings robots to Girl Scouts STEAM events. We also loaned a prototype robot out to a team in Manhattan, Montana so that they could learn about FRC and see what a competition robot was like; we also set up a few video calls with that team to help them get started.

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

Our team members find many opportunities to be role models within the FIRST community. In 2019 during Deep Space, our team helped another team reprogram its robot; this assistance enabled them to compete. During Infinite Recharge, two of our team members participated in the FIRST Ambassadors program and met with regional sponsors and helped them learn about FIRST. Our team members also volunteer with area FLL teams and volunteer as judges for the annual FLL practice tournament in Missoula.

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

The Missoula Robotics team highly values inspiring and encouraging STEAM interests in younger students. Each year, our students judge a practice tournament for upwards of one hundred FLL participants, in the Missoula area. Our members go out of their way to coach several FLL teams throughout their seasons at area elementary and middle schools. In the past three years, we have mentored four such teams who have been highly successful at the state tournament.

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?

Our team has inspired young people to become STEAM leaders and innovators. We mentor many FLL teams in Missoula and participate as judges at practice FLL tournaments. The FLL teams our members mentor have been very successful, often winning state awards and moving on to national competitions. In the past, we have assisted FRC teams who were struggling at competitions. Last year, we helped FRC 7905 build a climbing system and helped them pass inspection; they ranked ninth after qualifiers.

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 have created many long lasting partnerships, most notably with Cushing Terrell, Ole Beck VFW Post 209, and the Missoula County Public Schools. Many of our mentors come from relationships with local businesses, including engineer Alan Bronec, from Cushing Terrell, who has been a mentor for 12 years. The school that we are based in also provides amazing mentors such as Brian Boot and Dan Lande. Thanks to our generous sponsors, we have been able to compete at a regional FRC event every season.

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

Our efforts to promote inclusiveness, diversity, and equity have increased in the past three years. We contacted an Inclusiveness and Diversity mentor to talk to us about our plans. We did some ice breakers to add to the feeling of team spirit and community. Lastly, we made inclusiveness and diversity agreements so that the team could hold each other accountable. We hope that the many benefits of this intentional work this season will remain with the team for years to come.

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

Our team has remained stable over the years, despite having had six different lead mentors in the last six years. Our business team has created a plan that is updated annually as a guiding document for the team. We have also created a new system for tracking student tasks that allows us to analyze the team's efficiency and see where we can make improvements. While meeting this past summer, a few team members brainstormed a new student-led organizational structure that was implemented this year.

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

Over the last three years, we have worked hard to reach out, engage, and maintain our relationships with our sponsors. Our business team reaches out to potential sponsors each year to maintain our recruitment and retention levels. To maintain our sponsorships, we feature logos on our uniforms, banners, website, social media, and even on our robots. This year, we also started a newsletter that we send to our sponsors. These actions allow us to effectively engage and retain our sponsors.

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

Our team is working on improving our efficiency in the design-build process. We tend to spend more time designing and prototyping than necessary, which leaves us rushing the fabrication and build stage. By streamlining our process at the start of the build season, we will allow our programming team more time to fine-tune their work so there are hopefully fewer adjustments and changes necessary during competition.

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

We do much to spread *FIRST*'s message and ideas around Montana. Our team has greatly inspired many students in Montana who normally wouldn't have access to the STEAM opportunities that *FIRST* provides. We have grown in size, resources, and outreach which our accomplishments reflect. In particular, winning the Team Spirit award two out of the last three years. Our team exemplifies that, as Dean Kamen says, "*FIRST* is more than robots."

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.

Our team is unique as it is made up of students from all three high schools in our area. Our members compete against each other in other extracurriculars, but come together as a team for FRC. We value action, inclusiveness, individuality,

and the core values of FIRST. We are a community driven team with strong roots. Our team is proud to be the only FRC team in Montana, and we hope to inspire and help fund more FRC teams by contacting our state legislature in the future.

Essay

We are the Missoula Robotics Team, FRC 3216, from Missoula, Montana. Our team was founded in 2009 by a local high school teacher. All members of the team in our rookie year were from Hellgate High School. Our team later expanded to include members from all three Missoula area public high schools and moved locations. The team is currently headquartered at Sentinel High School. Two years ago, the STEM center at Sentinel underwent an extensive renovation including significant upgrades to the computer science center and the industrial arts center. The STEM center also includes designated classrooms for auto shop, bike shop, computer science, engineering, woodshop, metals shop, and welding. We are the only FRC team in Montana, and we aspire to expand the impact of FIRST throughout our state. Our team's mission is to spread awareness of FIRST and FRC throughout Montana and inspire other high schools to start their own teams. We foster long lasting relationships and encourage the FIRST core values inside and outside of our team. In the past three years, we have organized our team, increased our membership, added to our sponsors list, and have been honored to win FIRST awards at each regional event that we have attended.

This year, we are proud to introduce our new team structure. Our advisors/lead mentors are at the top of the structure. Then, there is a student Team Manager that oversees the whole team at large and acts as a captain. Parents, mentors, and volunteers fall on the same level as the Team Manager. Then, there is a Student Lead for each of our three sub-teams: build, programming, and business. The leads manage day-to-day activities and work with the Team Manager. The Build Lead, Programming Lead, and Business Lead oversee the students working in each respective group and keep projects on track. All students and mentors work closely with the Lead in their respective area. Major decisions are made jointly by the Team Manager and all three Student leads based on input from the team at every meeting. This year, we are also excited to roll-out a new system developed by a few of our team members to help manage team activities. The new system, the Point Tracker, keeps track of our overall team progress throughout the year, as well as individual team member contributions throughout the year.

This year, our school district generously granted us a building that has sat empty since the recent remodel of Sentinel High School. Consequently, our fundraising goal is higher this year than previous years because we aim to renovate the building, particularly the HVAC system. This year we have also decided to reconstruct our t-shirt shooting robot, Timmy, which is used at community outreach events to generate interest in FIRST and in our team. We bring Timmy to local FLL events to raise awareness in young FIRST members that there are FIRST opportunities for them after FLL. Many of our current team members remember that their first exposure to FRC was at an FLL event seeing our team and Timmy. We have also used Timmy in the past at parades and other events with large crowds. Timmy was originally built six years ago and has been well-loved since. We are taking his retirement as an opportunity to update our design to reflect the growth of our team since his original construction. An updated robot, Timmy 2.0, will debut next season. Timmy 2.0 will feature a different shooting mechanism with more barrels, allowing for more t-shirts to be fired before reloading. Timmy 2.0 is also designed with an easier mechanism to switch between shooting t-shirts and shooting candy. As our team has grown over the years, technology has improved significantly, and we now prefer a standard drive train with different motors than what was used on the original bot. We also plan to make the new design much more aesthetically appealing and fabricate it entirely in our team's colors. We are taking creative inspiration from similar robots created by several other FIRST teams.

Our team loves being active in our community, including promoting FIRST and FIRST events. Annually, our local mall hosts a regional auto show where we have an information table and do robot demonstrations. At this event, we interact with many teens and adults interested in the build process of our robot, particularly fabrication and welding. At the event this year, we made several new connections with potential mentors. We also participate in community nights organized by local restaurants. At these events we talk to many community members across all fields of work and interest. Some have never heard of or interacted with FIRST before and others are familiar with the organization, but they are all always excited to visit with us about FIRST in Montana. Our team also creates metal art that we sell at local craft fairs throughout the pre-season. This art is primarily keyholders and wall-mounted coat hangers laser-cut in the shape of our state. We then heat treat the metal so there are many colored options. The craft fairs are great outreach opportunities for the team. We have also volunteered at the local food bank to package boxes of food for those in need in our community. At one packing event, joining with other local groups, we were able to put together hundreds of food packs for those in need. Many members on our team also mentor FLL students at area middle schools, and every year our team volunteers to be robot game judges at the local FLL practice tournament. This practice tournament typically has over 25 FLL teams participating. It is a great opportunity for our team to let these FLL students know about FRC and the opportunity to be on the FRC team in high school. Additionally, on two occasions, mentors and alumni have helped take the Missoula-based FLL team they mentored on to national competitions; one of these teams was a Girl Scouts team.

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We are incredibly proud of the honors we have been awarded in the past. In 2010, our first year, we won the award for being the highest seeded rookie team, which was a great way to kick-off our team's career. A few seasons later, in 2013, we were presented with the Judge's Award, which was very validating for us as a team after our first few years of hard work when we were working to build connections and resources. More recently, in 2018, we were awarded the Team Spirit Award, and in 2019, the Excellence in Engineering Award. We were very proud to be recognized for the excitement and dedication of our members, and especially grateful for the recognition of our engineering skills. These awards were important to us as a signal that our team was heading in the right direction. Last year, in the 2020 season, we won the Team Spirit Award for the second time. We were very happy to be able to demonstrate the excitement FIRST members feel at competitions in a positive, fun way. We are grateful for our success in the past and are looking forward to working hard in the future.

The Missoula Robotics Team, FRC 3216, is proud to exemplify the community values of FIRST throughout Montana. We provide a critical hub for STEAM education for youth as there are limited opportunities to these experiences in our community. Our newly developed team organizational structure and point tracking system have been critical this year in supporting our team as we strive for success in the at home challenges, as well as in our other team projects this season such as converting our donated building into a true robotics center and rebuilding Timmy, our t-shirt shooting robot. This season we have risen to the challenge of continuing to promote FIRST safely throughout our community as we navigate uncharted territories during the global pandemic. We are very proud of our team's achievements over the past 12 years and believe that we have more recently made some great improvements that will carry us forward. We are grateful for the opportunity to submit this application. Thank you for your time and thoughtful consideration. Be well and stay safe □ your friends at FRC 3216.