

## Chairman's Award - Team 4329

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2019 - Team 4329

### Team Number

4329

### Team Name, Corporate/University Sponsors

The Boeing Company/Microsoft/STEM2U Youth Programs/Lowe's Hardware of O'Fallon, MO/The Lutheran Foundation of St. Louis/EPC Computers/Kelly Casters/Foobadap Imprinting/Dassault Systems - Solid Works/Baker Engineering Corporation&Lutheran High School of St Charles County

### Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

-Participants are in the fastest growing extracurricular at LHS sought out by faculty, parents, and students. Families make enrollment decisions based on Team 4329. -100% participants to college with 80% pursuing STEM related degrees - Robotics "Letter" program on par with Varsity athletics -St. Charles County STEM Award recipients -Leadership development opportunities leading to invited roles with STL regional FIRST planning teams such as: MC, DJ, VIP Ambassadors, Event organizers

### Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

Team 4329 established a non-profit corp. which is all about K-12 STEM community outreach and is aptly named "STEM2U Youth Programs". Team 4329's corporation has organized funding, acquired equipment, connected community leaders and organizations, and delivered programs free of charge to students and organizations who were previously not part of any formal STEM or robotics program.??Creating a new strategic partnership with Lindenwood University was a key result of this community outreach.

### Team's innovative or creative method to spread the *FIRST* message

The Lutheran Roboteers enjoy spreading STEM in original ways, like creating a t-shirt cannon, named Reggiie, to spread STEM in our community. He was built in the summer of 2015, to exhibit at sporting events. The Roboteers also created a STEM pipeline using the progression of FIRST programs, with a total of 18 FIRST teams over all levels. These teams are supported by our non-profit, STEM2U Youth Programs. Using this pipeline, 4329 brings kids into STEM as young as 5 to build their interests.

### Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

As a Lutheran team, we love to show our religious attributes along with FIRST's principles. Our team members demonstrate their passion for robotics by helping other teams especially in the pits with last minute repairs, and during the build season through Cupcake Tours. Our Cupcake Tours consist of bringing cupcakes to other area teams and talking about their progression through build season and offering up any help that we can give.

**Describe the team's initiatives to help start or form other FRC teams**

While Team 4329 has not officially started any FRC teams, we work to build relationships between teams. By going on "tours" to other team's shops and working on outreach events with other teams, we make connections and maintain partnerships with other FRC teams. In the past years we have co-hosted an annual Kick-Off Event at Lindenwood University to bring even more teams together. 4329 has partnered with team 1706 to host both Kick-Off and off-season events.

**Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)**

Team 4329 has teams in all levels of FIRST. To do so, we created 12 Mobile STEM Camp kits; with these kits we can bring schools the tools to explore STEM. Through this process we introduce many groups to FIRST and enable the start of many teams. The first FLL team we started, in 2013, was the LEGO Lugnuts. Overall, we have started 2 FTC teams, 13 FLL Teams, and 3 JFLL teams; many of these teams we continue to mentor or assist, with the help of both Roboteer students and mentors.

**Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program**

With teams in every level of FIRST, Team 4329 enables students to transfer through FIRST programs. We have established a pipeline of programs where kids can learn and progress. By starting in JFLL they grow in knowledge until they enter higher levels of FIRST. At community events over the summer, we collected contact information from interested families and then were able to connect them with teams in their area. Our goal is to start kids early so they can grow and mature with the program.

**Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

4329 works to share our knowledge of STEM with all people inside and outside the FIRST community. In total we have started 18 FIRST teams. We provide our FTC teams with meeting space, mentors, materials, tools from our shop, and funding. We assist the FLL teams with Mobile Stem Camp Kits. The Roboteers also spark a love for FIRST in younger kids through our Mobile STEM Camp kits, which we disperse among schools in the St. Louis region.

**Describe your Corporate/University Sponsors**

Lindenwood University hosts our kick off event, providing space for all attending teams, a complimentary breakfast, and volunteers to assist with the university's sound system and set up. Another sponsor, Baker Engineering, fabricates complex parts for our robot that we can not make in our own shop because we lack the equipment. Natoli, on top of financial donations, is working on creating an engineering internship program for our team.

**Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years**

Team 4329 has built strong enduring partnerships by connecting students with professionals and letting them see first-hand their direct impact on the FRC experience. Students visit sponsors regularly to demonstrate the robots, provide team spirit wear, and solicit professional advice on career direction. Team 4329 is particularly proud of the new strategic partnership with Lindenwood University and their commitment to not only host FIRST events but to also bring scholarship opportunities.

**Describe how your team would explain what *FIRST* is to someone who has never heard of it**

FIRST is an international organization that prepares students to live in a world full of STEM. It builds the confidence, and life skills students need to pursue careers in all fields. FIRST also teaches students how to work as a team to complete a STEM challenge with an enjoyable game, reaching kindergarteners through twelfth graders. High School FRC teams are encouraged to pay their knowledge forward by starting new teams in FIRST to continue the pipeline.

**Briefly describe other matters of interest to the *FIRST* judges, if any**

Team 4329 is very excited about developments outside of FIRST. In the last year, Lutheran High has begun the building process on a new school wing. Through curiosity and the overwhelming support presence of the Roboteers, this new wing will include dedicated STEM classrooms and workshop. With this addition we were able to add 2 engineering classes into the current curriculum and are working on adding even more. These classes will grow a dedication to STEM throughout the entire school.

**Team Captain/Student Representative that has double-checked this submission.**

Ella Emerick

## Essay

The Lutheran Roboteers, Team 4329, united as one, travel down a path of challenges and triumphs which have inspired an attitude of lifelong learning. This journey, although filled with successes and failures, has ignited our passion to reach out, build big, and change hearts. Our humble beginning eight years ago launched a multi-year, multi-layer excursion fueled by a vision for creating passion for STEM throughout the nation. To bring this vision to life, 4329 founded our own non-profit corporation called "STEM2U Youth Programs", which promotes the FIRST progression of programs in the St. Louis Region. Through the innovation of this corporation, the Lutheran Roboteers hope to first inspire the state, then the nation. 4329 ignites lifelong learning by reaching out, building big, and changing hearts.

Within the past eight years, our team has expanded to a total of twenty-six active students, eight full-time mentors, five part-time mentors, and a parent support squad. This amounts to a grand total of more than 50 Roboteers. To support the Lutheran Roboteers and surrounding communities, 4329 founded "STEM2U Youth Programs", a non-profit organization created to fund STEM community outreach. Our STEM community outreach sponsors more than just our events; this non-profit helps us fund our STEM pipeline created to involve children as young as five in FIRST programs. Despite our small size, 4329 has made a considerable impact on the FIRST community by creating new and innovative ways to share our passion for STEM.

The FIRST program alone has touched the hearts of both students and mentors alike. Director of Robotics, Dave Zilz, says, "FIRST allows me to watch students to grow into successful engineers, which is its own reward. Giving younger students the ability to experience engineering with STEM, when they didn't have the opportunity, helps to inspire the next generation." Through FIRST, we experience opportunities in which we apply our knowledge to real life. For example, the St. Charles County Police Department has approached us with the opportunity to make fabrications for their Bomb Squad robot. Through this, not only do we hope to spread the message of FIRST, but also to increase the safety of our community. Building on this partnership, 4329 was invited by our Police Department to construct Easter eggs and to help with an Easter egg hunt for blind children. Our love for children inspired us to volunteer at the Go Baby Go event hosted by 3284 Camdenton LASER. This event allowed disabled children to enjoy the freedom of movement, in the assembled robotic cars. Through this event, 4329 built a strong partnership with Team 3284 Camdenton LASER. When asked about our relationship, Mrs. Sherry Comer from Team 3284, stated "Camdenton LASER 3284 has been honored to work with the 4329 Lutheran Roboteers robotics team over the past several years. In the process of mentoring them we often found that we were the ones being inspired as we watched them grow and bring their dreams of a STEM center to reality for their school and community. Their tenacity, hard work, and willingness to put others before themselves embody the FIRST core values". Our passion for robotics has influenced us to REACH OUT and spread our love of STEM to all people in our community.

Team 4329 makes up about 7% of the 381 students attending Lutheran High School, and reflects a diverse cross-section of our student body. Over 75% of our students participate in at least one other extracurricular activity, over 80% hold a GPA of over 3.0, and each year we host at least one international student. Despite our small size, we believe Team 4329 has made a massive impact on our small community. In the past four years, 100% of our alumni have attended college and over 80% study in STEM fields. We continuously make connections and strengthen old friendships through numerous off-season competitions and kick-off events. To our team, FIRST Robotics is the first step into the world of STEM. We learn many valuable skills such as 3D modeling, programming, electrical, mechanical work, and business. The LHS administration, faculty, and community have encouraged the Roboteers' presence. They have even incorporated a dedicated STEM space in the new wing of our school. The faculty supports workshops in the school because of the academic benefits of robotics. These benefits took a huge leap when we introduced engineering classes into our curriculum. The engineering classes opened our school's curriculum into a whole new world of learning, allowing students to be introduced into the world of Science, Technology, Engineering, and Mathematics. The Lutheran Roboteers have BUILT BIG by opening a pipeline of connections between our school addition project and the growing STEM Community.

Furthermore, our team partnered with team 1985, Hazelwood Robotics, to create and host the first offseason FRC event in the St. Louis area called the Gateway Robotics Challenge (GRC). This offseason FRC event provides an opportunity for 24+ teams to compete in the fall using the previous year's game challenge. This has helped spread the FIRST message by allowing new and returning team members to compete using gracious professionalism and cooperation. In 2018, 4329 had a new opportunity to expand this competition to a larger facility at Lindenwood University. Partnering with Team 1706, 4329 provides the St. Louis area with a world class STEM event that helps to excite and ignite passion in students during the offseason. GRC also gives students the opportunity to talk to college representatives, companies, and other FRC teams throughout the day. Team 4329 assists in field setup/tear down and our student volunteers serve as the Master of Ceremonies and Game Announcers during the event. In 2018, 4329, partnering with team 1706, co-hosted our first annual FRC Kickoff Event at Lindenwood University. In just two years, our attendance grew 250% from seventeen to forty-four teams, a statistic we are incredibly proud of. The Lutheran Roboteers and the Ratchet Rockers were very excited to share our passion to three times the number of teams as the years previous. Both kickoff events drew wide spread media attention and created a new level of excitement about FIRST and STEM in the FRC community and surrounding St. Louis counties.

**Essay - page 2**

In order to cultivate the love of FIRST to the younger generation in the St. Louis area, we host a series of STEM camps for elementary and middle school students. Through these STEM camps, we have an opportunity to be role models to dozens of children in surrounding areas. Our captain for the 2019 season, Zeke Emerick, reminisces about his time attending a 4329 STEM Camp, "The STEM camps helped me realize my potential in STEM, and encouraged me to join one of 4329's FLL teams. My experience with the FLL team encouraged me to join the Lutheran Roboteers in high school". Additionally, the need for STEM in schools was still very prominent. Knowing this, 4329 started the Roboteer Cadets FTC teams 10868 and 13041, to encourage middle school students to work side by side with our FRC team. Students and mentors help run the FTC team and incorporate them in our daily meetings. Furthermore, in 2017, we hosted the first ever FTC meet in our county at Lutheran High School St. Charles, which we called the Roboteer Rumble. The Roboteer Rumble invited the youth of Missouri and Southern Illinois to engage in friendly competition, allowing them to practice lifelong skills, such as Coopertition and Gracious Professionalism. To extend the Roboteer mission, we started thirteen FLL teams over the past five years. The Lutheran Roboteers have extended our STEM Pipeline by lending Mobile Stem Camp (MSC) kits to grade schools and community affiliations at no cost. Each of the twelve MSC Kits contains a Lego Mindstorm Robot, a kit of parts, and a Windows Surface Tablet, allowing us to teach students FLL level design and programming. Team 4329 has assisted various youth programs in the St. Charles area, including Cub/Boy Scout troops, Boys and Girls Club participants, and various Lutheran middle and elementary schools. We completed our FIRST Pipeline last year in 2018 by starting three Jr. FLL teams, allowing children as young as five to learn about STEM. By encouraging high school, middle school, and elementary school students, our team CHANGES HEARTS by sparking inspiration for the engineers of tomorrow.?

Team 4329 graciously thanks our sponsors that have helped us make our dreams a reality. We want to thank Microsoft, Boeing, Natoli, Lowe's, Shapiro Metal Supply, STEM2U Youth Programs, Bayer, Baker Engineering, Sugarbot Sweet Shop, Foobadap, Kelly Casters, and the Lutheran Foundation for their assistance and grants over the years. Team 4329 has been blessed to share our time, talents, and treasures with our school and surrounding cities. As long as STEM exists, Team 4329 will travel far and wide to spread our message. Through Christ, we use our talents to spread both God's love for his children and our love for STEM with the world, because "They'll know We're Roboteers by Our Hats, and Lutherans by Our Love". 4329 ignites lifelong learning by reaching out, building big, and changing hearts.