

CYBER CATS

“Always on the Prowl”



**5436
CYBER CATS**

STONE CREEK HIGH SCHOOL

Rochester, MI

2019-2020 Business Plan

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1.0 TEAM OVERVIEW

1.1 Mission Statement

Cyber Cats Team 5436 strives to foster a fun, innovative, and creative learning environment that inspires teamwork through STEM and business principles. Our team's success in *FIRST* Robotics is built upon a strong relationship among our students, mentors, school, community, and sponsors. We strive to make a positive impact on not only ourselves, but also on our community and the world.

1.2 Team Values

In 2015, our team came together to establish our core values. These values are agreed upon by all team members, and we strive to keep them central in everything we do. We believe these core values help us run an effective team and allow us to make the participation experience positive for everyone. In addition to Gracious Professionalism®, the Cyber Cats established the following as our values:

- **Respect:** We accept each other and the unique talents and experiences we bring to the team. We behave in a spirit of honoring each other as members of the family. We listen to the opinions and observations of others. We give respect in order to receive respect.
- **Teamwork:** Each member has a role to play on the team. Our best solutions come from when we work together with students, mentors, sponsors, and school administration. Effective teamwork demands strong respect, relationships, and communication.
- **Innovation & Creativity:** We appreciate and encourage new ideas and innovative ways to solve problems. We embrace trying new technology when appropriate. As a team, our goal is to develop creative solutions and put them into action.
- **Fun:** We believe that being a member of the robotics team should be a fun and enjoyable experience for all members. We believe that school, robotics team responsibilities, and life should be integrated in such a way that being a member of the team is a rich and rewarding experience.
- **Cooperation, Commitment, and Communication:** We believe that all members of the team should demonstrate commitment to the team values and mission, cooperation with all team members, and a continuous effort to communicate so the team can meet the missions of *FIRST* and our team. We believe in all team members following and helping keep us on track with these “3C” values.

Cyber Cats Team Values:

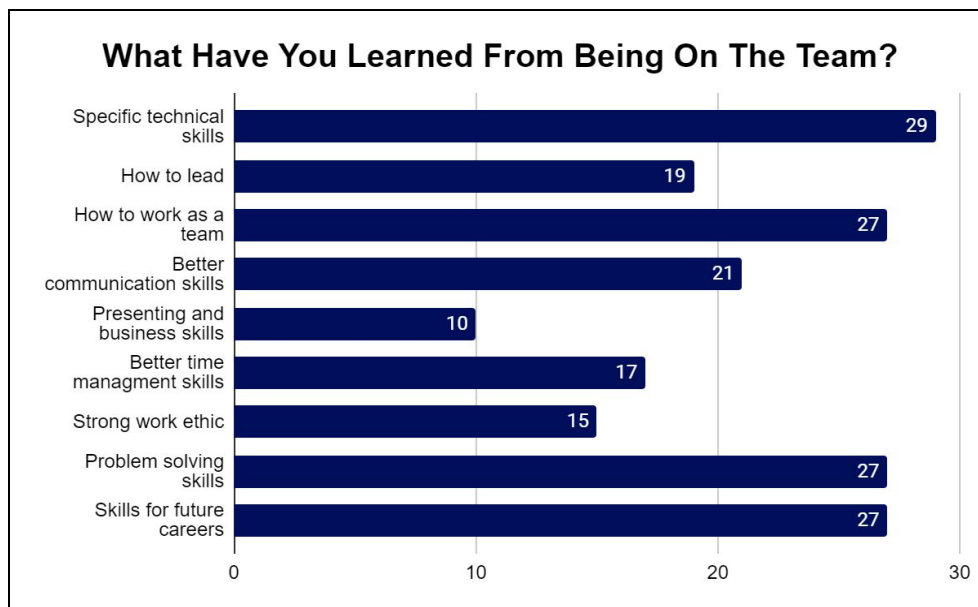
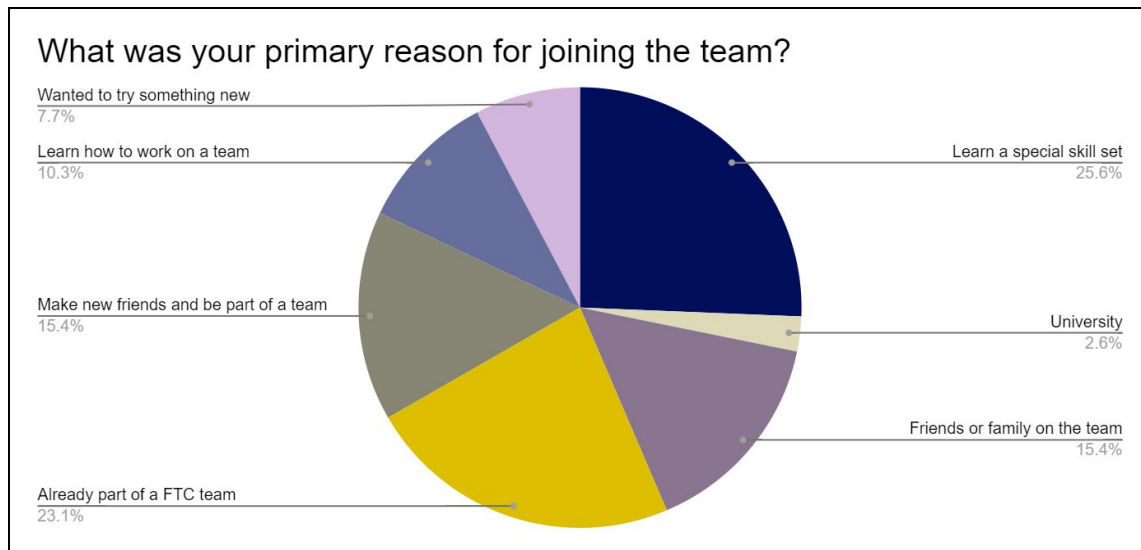


1.3 Optimizing Student Learning

We want our students to get all they can out of the *FIRST* robotics experience. One of the main goals of our robotics team is to help students gain valuable skills that they can apply to real life. We benefit from our team size, which allows students to experience the many areas of robotics. We also benefit from our low student to mentor ratio; this year we have one mentor for every two students. Our goal is having the students do the majority of the work rather than the mentors; that way, *FIRST* learning goals are achieved.

1.4 Team Survey

Throughout the years, we have found that students join our team for many different reasons. To better understand these reasons, we conducted a survey of most of our team members to figure out their primary reason for joining the team. The survey results can be seen below. Additionally, we asked team members what they had learned from being on the team to ensure that we were meeting our goals of teaching students about a wide variety of topics. Students reported a wide range of learning topics which can be seen below. The results of this survey are encouraging because it proves that our students joined the team for diverse reasons and are learning many different things, both of which are goals of our team.



1.5 Team Structure

Our team is organized into six engineering sub-teams and four business sub-teams each with a student leader and mentor support. In addition, we have a safety sub-team that is in charge of ensuring team safety. In order to ensure collaboration between the sub-teams, there is one overall student lead for each of the engineering and business areas. Students get placed into sub-teams of their choice in the beginning of the season, which helps students build and work successfully in their own comfortable environments.

Business Management Teams

Business Plan and Finance: Prepares and submits business plan and chairman's award material, manages team finances, sends out weekly newsletter

Digital Content: Captures images for team use including build season and competitions, manages the website and social media sites

Imagery: Creates displays, posters, and signage for robot and pit

Chairman's Team: Prepares and presents Chairman's submission

Safety Team

Teaches team about safety practices and safe behaviors, creates safety initiatives, and gives safety presentation, as well as updating team safety manual and injury chart

Engineering Build Teams

Controls & Programming: Codes robot to control both the drivetrain and the manipulators during teleop and autonomous modes

Game Strategy & Scouting: Analyzes teams to create a list of attributes for the purpose of game play strategy and alliance selection

Mechanical: Prototypes, designs, fabricates, and assembles the mechanical systems

CAD: Creates detailed design in computer aided design (CAD)

Electrical: Prototypes, designs, fabricates, and assembles the electrical and pneumatic systems

Field Build: Builds all field elements and pit structures, helps assemble and disassemble field

2.0 RISK ANALYSIS

We believe that one of the most important factors in maintaining a successful team is risk management. In order to do this, we use a SWOT analysis to lay out both our team strengths and opportunities as well as our threats and weaknesses (see next page).

One of our main weaknesses is that we have a limited amount of space in our current build room. There is little separation between the business and build rooms. It is often noisy on the business side of the room, making it difficult to focus. However, this year we have the opportunity to potentially expand into other parts of our building to give more working area to our build members. Currently, we have taken a step in the right direction by getting permission to use the choir and band rooms, helping solve the problem of insufficient separation between the build room and business room. Expanding further into other areas of the school would also probably allow us to use more computers, which would help solve the additional problem of not having enough technology. Another way we have countered the lack of technology is through partnerships with our sponsors that have allowed us the potential to purchase new technology at discounted prices.

One of the main threats to the team is the potential loss of sponsors and funding. To avoid this, we maintain close contact with our sponsors through our weekly newsletter, "The Weekly Roar" as well as our "Meet the Cyber Cats" presentation day. We believe that if our sponsors are aware of what they help our team accomplish, they will continue funding our team. Another threat to our team is competition with other teams for resources and sponsors. Our team is located in Michigan, and Michigan has the greatest concentration of *FIRST* teams compared to any other state. This means that competition for resources and sponsors is high. However, by participating in community outreach events, we ensure our name is always visible which helps attract new sponsors. Community outreach also helps attract new team members, many of whom have parents with connections to potential new sponsors. Also, many parents of new students become mentors, addressing the risk of a possible loss of mentors. A third threat to our team is the loss of graduating team members. This year, we have a very large senior class. When they graduate, we will be losing many experienced team members. To avoid this becoming a problem, we place an emphasis on including and teaching younger, less experienced team members the skills needed to make the team run smoothly. This means that when the older team members leave, the younger team members are ready to fill their position and start teaching the newest members. One last threat to our team is unpredictable weather, such as snow days. Unexpected snow days can lead to a loss of build time, which can be problematic with such a short build season. However, we have strong connections with staff in the school, so we are usually able to get into the school to work even on snow days.

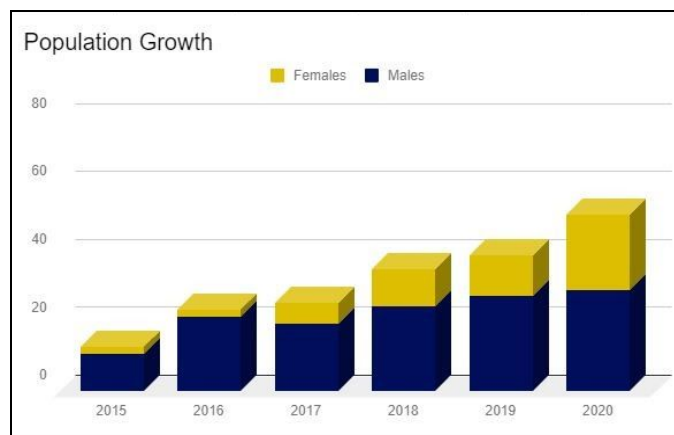
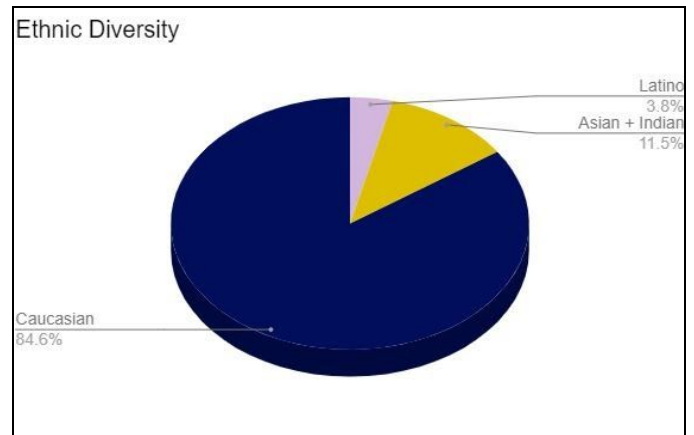
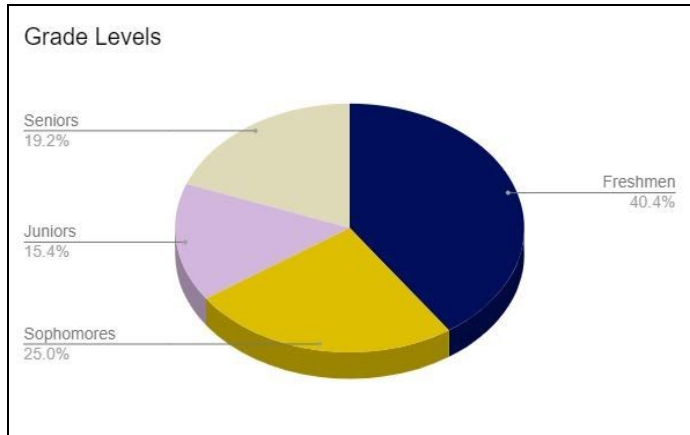
SWOT Analysis

Strengths <ul style="list-style-type: none">• Increasing team membership• Low student to mentor ratio• Student led sub-teams• Strong collaboration partnerships with other teams• Versatile build room• Solid budget and strong sponsorships• Strong foundation to inspire others• Diversity of ideas and interests• Gender diversity• Experience at all levels of competition	Weaknesses <ul style="list-style-type: none">• Limited Space• Limited availability of computers and other technological tools• Lack of separation from build room
Opportunities <ul style="list-style-type: none">• Expansion of real estate• Increase of community outreach• Increase of mentoring other teams• Many new students• Exposure to new students and sponsors	Threats <ul style="list-style-type: none">• Loss of sponsors• Loss of students• Large graduating senior class• Statewide competitors• Loss of mentors• Loss of build time due to weather

3.0 DIVERSITY AND INCLUSION

It has been proven through multiple streams of research that diversity in teams will lead to extraordinary results. Women in STEM have traditionally been a minority. The Cyber Cats have encouraged more participation from women throughout our years as a team. Our female numbers have substantially increased from two women in 2015 to twenty-two in 2020. The women on our team mentor the community to inspire young girls to join a *FIRST* team and get involved in STEM. Each year, we participate in the off-season Bloomfield Hills Girls Competition to give the women on the team an opportunity to practice new skills. We encourage younger girls from the Hart E-Bots FTC team to watch this event, in hopes that they will pursue robotics to a higher level. We are planning on continuing our participation in this event in the future. Our team also prides itself in continuing to expand our racial diversity. At Stoney Creek High School, the majority of the students are Caucasian, thus making it difficult to have a racially diverse team. Despite this, we continue to sustain a diverse population on the Cyber Cats by encouraging and welcoming all minorities from our school. Our inclusion philosophy is to seek diverse opinions from all members of the team in both engineering and business aspects. As a team, we hope to promote the message that there is a place here for everyone, regardless of race, age, experience level, and gender.





Above: Team Demographics

Below: Bloomfield Hills Girls Competition

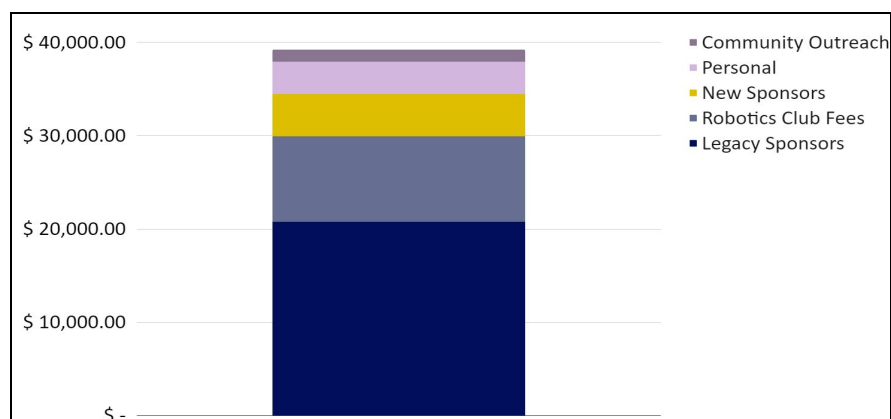
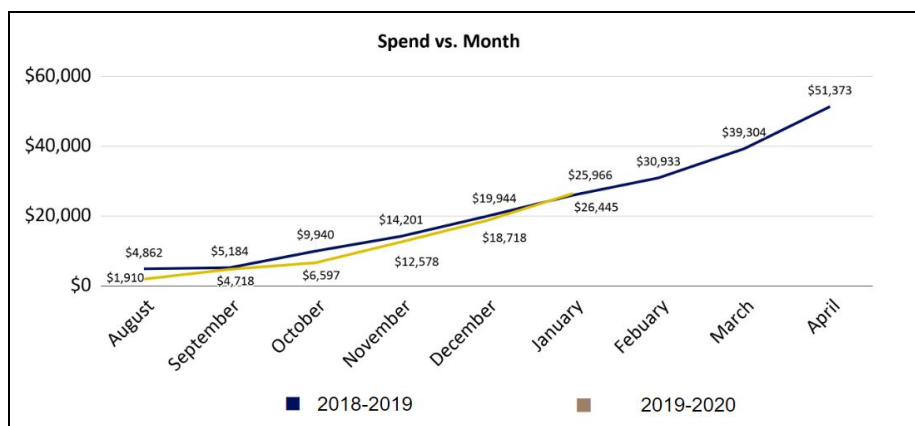


"Always on the Prowl"

4.0 TEAM FINANCES

4.1 Budget and Spend Plan

In order to ensure that our team is spending responsibly, we create and track a comprehensive budget. Our budget is based on a season in which we compete in two district competitions and the state competition. This year, we tried a different approach to managing the team's finances. Instead of giving each subteam a budget as we had in previous years, we created a spend chart that compares our expenditures from year to year and by month. We used last year's season as the baseline, and by month we can compare how much we spent compared to the amount spent last year. If we go over for a particular month, we determine if we need to adjust our spending in coming months to ensure we stay on budget (first figure). Since donations are critical to our budget, we also track our goals and the status of donations by sponsor (second figure). This, along with our spend tracking, enables us to know our incoming and outgoing funds so we can manage our budget more effectively. We target to save 20% of our donations for future years in case we do not meet our donation goal for that year or if unexpected expenses arise that we cannot mitigate. So far this year, we are on track budget wise. Our current donations are less than our total goal, but this is only temporary as we have pending donations and we receive additional donations from many of our sponsors as we advance through the levels of competition.



4.2 Sponsors

In order to be a successful and an independent team, we rely on help from various sponsors from whom we receive financial support, mentoring, and tools for our build room. Currently, we have gained the support of most of our sponsors through parents of students on the team. We hope to continue adding sponsors as more students join the team as well as by making sure that we are an active presence in our community. We have three different sponsorship levels: **Kitten**, **Cub**, and **Cougar**. For the Kitten level (\$100-\$499), sponsors can get their name or logo on our social media pages. With the Cub level (\$500-\$2499), sponsors can get their name or logo on our social media pages, a small logo on the robot, a small logo on banners in the pit, a small logo in banners used for community outreach, and their business' name read during each competition opening. At the Cougar level (\$2500+), sponsors can get their name or logo on our social media pages, a large logo on our robot, a large logo on our banners in the pit, a large logo on banners used for outreach, and their business' name read during each competition opening.

We have found that keeping sponsors engaged in everything we do is the key to maintaining a strong relationship with them year after year. In order to do this, we implement a few various outreach strategies to keep them engaged with our team. For example, we send out a weekly newsletter and invite them to our "Meet the Cyber Cats" day where we show off our team, build room, and robot to show sponsors everything their support enables us to do.



5.0 OUTREACH & COLLABORATION

As a team, we strive to inspire not only our students but also the community and future generations. We believe that the best way to do this is by getting involved in community events and collaborating closely with others in our community. To achieve this, we place an emphasis on many different types of community outreach, STEM related outreach, and collaboration.

5.1 FIRST / STEM Outreach

One of the highest priorities on our team is to spark an interest in *FIRST* and STEM related activities among younger generations. Our goal is to inspire people by spreading the messages of *FIRST* and promoting STEM in the community to benefit every aspect of the lives of younger generations.

Middle School Mentoring

Since 2016, we have mentored Hart Middle School's FTC team, the E-BotsTeam 8478, to help them gear up for success. In the past, we held a week-long "mini-camp" to help the E-Bots FTC Team switch from Labview to Java. This season, we focused on improving their business and presentation skills along with designing and building a successful robot. We have also graciously allowed them to use our build space for the past three years. With our assistance, they qualified for the state competition for the first time in the 2017 season and have qualified for states ever since.



Hosting Jr. FLL Exhibition

To date, we have hosted four Jr. FLL exhibitions in our school. This event is the only one of its kind in our area. We host the event at our home school and recruit various sponsors and community partners to run STEM related stations for the kids to enjoy. Our team members volunteer as judges, help out at stations, and run a concessions stand. As a team, we feel the event is a huge success because it paves the way for future STEM and business related careers and teaches children about the important values of *FIRST*, which they will use in every aspect of the rest of their lives. The exhibition is always a huge success and we plan to host more in the future.





Science Fairs

The team participates in various science fair demonstrations using our robots from past years. So far, we have completed events at Hugger, North Hill, McGregor, and Musson Elementary School science fairs. We will continue participating in science fairs in the future. Our goal is to spark an interest in robotics amongst young kids and inspire them to join a *FIRST* program in the future.

5.2 Community Outreach

Our team takes pride in the amount of activities we do to engage with our community. Doing this helps us inspire more people to find ways to participate and support *FIRST* related activities. It also allows us to be known throughout our community.

Rochester Hometown Christmas Parade

We participate in the Rochester Hometown Christmas Parade annually in the beginning of the season along with other FRC teams in our area. An estimated 75,000 people view this televised event. By doing this, we help create awareness for the advancement of STEM and *FIRST* throughout our community.



Hunger Walk at Rochester Park

Annually, our team participates in a “hunger walk” in collaboration with the AdamBots, the FEDS (our Rochester school district *FIRST* teams) and the E-bots (our FTC middle school team). This walk raises money and gathers kitchen items for a local food pantry, the Rochester Neighborhood House.

Sponsor Presentations

We present our robot to our sponsors to help show them what their support enables us to do. So far, we have done robot demonstrations at DENSO and ND Industries as well as GM and Brose. We plan to do more demonstrations this season as we are gaining more sponsors.





Newsletter

Every week during the build season, we create a newsletter called “The Weekly Roar” and send it out to students, parents, and mentors. The newsletter contains updates, important team happenings, interviews from student members of the team, pictures of the team working, and an update on the status of the robot. The newsletter helps us engage everyone it is sent to, which helps us retain sponsors, mentors, and team members. Our newsletter is also sent out in our school’s newsletter to spread our name across the entire school and get more students interested in joining our team.

5.3 Collaboration Partners

In the spirit of Coopertition®, we find that it is important to collaborate with other *FIRST* teams because it is an excellent learning experience and it exposes students to new ideas from different people on other teams. As a result, students are more accepting towards ideas and beliefs that are different from theirs, which is beneficial to the team and individuals.

Since 2015, we have been collaborating with

- The Adambots FRC Team 245 from Rochester Hills, Michigan
- The RoboVikes FRC Team 6121 from Grayling Michigan
- The Village Bulldogs FRC Team 3096 from Detroit, Michigan
- The Lambots FRC Team 3478 from San Luis Potosí, Mexico

In more recent years, we have been collaborating with more teams, including

- The FEDs FRC Team 201 from Rochester, Michigan
- RoboPhoneix FRC Team 2224 from Detroit, Michigan
- St. Ignace SHIELD from St. Ignace, Michigan
- The Byting Bulldogs FRC Team 3539 from Romeo, Michigan
- STEAMex Team 6832 from Santa Catarina, Mexico
- Pharaohs Team 7232 from Detroit, Michigan

We share ideas and resources with these teams which both benefits our team directly and allows us to share our knowledge. For example, we collaborate with the Byting Bulldogs to share a practice field. This lessens workloads while still allowing us to get in valuable practice. This also allows both teams to have other bots to practice working with or against other teams, better simulating a competition.

Two years ago, the three FRC teams in Rochester (201, 245, and 5436) came together to create the Rochester United Outreach team. Together, we volunteer to enrich the local *FIRST* programs. Having this alliance allows us to participate in more outreach and raise more awareness for *FIRST* in our community. For example, Rochester United recently put on a FTC event to allow teams to practice for the upcoming season.

6.0 FUTURE PLANS

In the six years since our formation, we have created a very strong, successful, and influential team. This has been made possible due to the support and contributions of our sponsors, mentors, and school officials, as well as the hard work of our students. We plan to continue to grow and improve our team in upcoming years. Some of our future plans include...

- Increasing our community outreach- As our team grows in size and experience, we want to continue to expand our reach and presence in our community to spread the message of *FIRST* and Gracious Professionalism®. In order to do this, we will continue to seek out new opportunities for community outreach and volunteering. Some current ideas include volunteering to help an animal shelter and doing presentations on *FIRST* in classes at our school to get more students interested in the program.
- Maintaining our team size- Currently, our team has 52 students. We plan to maintain this size as it allows all students on the team to actively participate in all aspects of the robotics program. If demand for the team grows too large, we will consider starting a second team within our school. This year, we included more students than usual as we have a large senior class and we would like to have an adequate amount of knowledgeable freshmen to continue the team.
- Increasing diversity- We would like to continue making our team as inclusive as possible. To do this, we will continue making inclusivity a priority, and will follow our diversity and inclusion plan.
- Continuing to add sponsors- As our team plans to expand our efforts out into the community more, we will need more sponsors to support us. We plan to become even more present in our community to gain new students, which leads to new connections with sponsors. We also plan to continue our current efforts of engaging with sponsors as this will help us retain sponsors in future years.
- Expanding our build space- As our team has grown through the past six years, we are beginning to struggle to accommodate our team in our build space. We are looking into expanding further into other areas of the school to help solve this problem.
- Expanding education- As our team is always looking to gain new knowledge and insight, we have sought out additional opportunities to learn new skills and values. We look forward to being able to expand this in the future, as our team strives to educate our students in as many fields as possible.
- Extending outreach into off-season- We intend on expanding our meeting time and outreach into the summer to allow us to do more outreach and planning without the time constraints of the build and competition seasons.

7.0 FINAL STATEMENT

Our goal is to inspire future engineers, programmers, and business leaders to promote success for future generations. With the help of community partners, we can make this vision a reality and help impact our community. We believe that with hard work, we are capable of contributing bright ideas and a new future for the world we live in today.

Appendix A: Awards and Results

2015

Rookie All Star: Howell District

Imagery: Troy District

Finalist: MARC Off-season event

2016

Winner: MARC Off Season Event

2017

Engineering Inspiration: Kettering District

Entrepreneurship: Troy District

Finalist: SVSU States

Quarter Finalist : Worlds (St Louis)

2018

Imagery: Southfield District and Troy District

Finalist for safety award: Southfield District

2019

Judges Award: Southfield District

Entrepreneurship Award Qualifier: Troy District Qualifier

Quarter-Finalist: FIRST World Championship



Appendix B : Team Origin

Before the official formation of our team, a few students at our school had been interested in participating in a robotics program. However, because there was no program at our home high school, some students from our school participated in *FIRST* robotics with the team at another high school in our district, Adams High School. Eventually, there were enough Stoney Creek students on the Adam's robotics team, providing Stoney Creek with the impetus to launch our own independent team in 2014.

During our first year, the team registered for two *FIRST* in Michigan District competitions. We started with thirteen student members and several mentors. After discussion on possible names, the team selected “Cyber Cats” to represent both the Stoney Creek cougar mascot and the robotics theme. In addition to building a robot, the team started working on marketing materials and uniforms, and developed a logo. Our team was off to a promising start.

In the fall of 2016, we were granted our own build room within Stoney Creek High School. When we got the room, it was vacant, so we were able to design a room appropriate for a *FIRST* robotics team. We decided to divide the room into two separate work areas for the Business and Robot Build teams. We devoted a lot of time in the fall of 2016 to designing and preparing the room. Many generous sponsors donated machines, tools, computers, and money to help us furnish our room. Additionally, we were able to repurpose several benches and carts, office furniture, and other supplies by salvaging them from a hospital and incorporating them into our build space. By the time the 2017 *FIRST* season started, our robotics room was ready to be put to use.



Appendix C : Team Contact Information

Website: www.cybercats5436.com

General Email: cybercats5436@gmail.com

School Name: Stoney Creek High School

School Address: 575 E Tienken Rd, Rochester Hills, MI 48306