CYBER CATS

"Always on the Prowl"

5436 CYBER CATS

STONEY CREEK HIGH SCHOOL

Rochester, MI

2020-2021 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 members came together to establish our core values. These values have been 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 along with giving respect in order to receive respect.

- **Teamwork:** Each member has a role to play on the team. Our best solutions come from working 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 an 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.

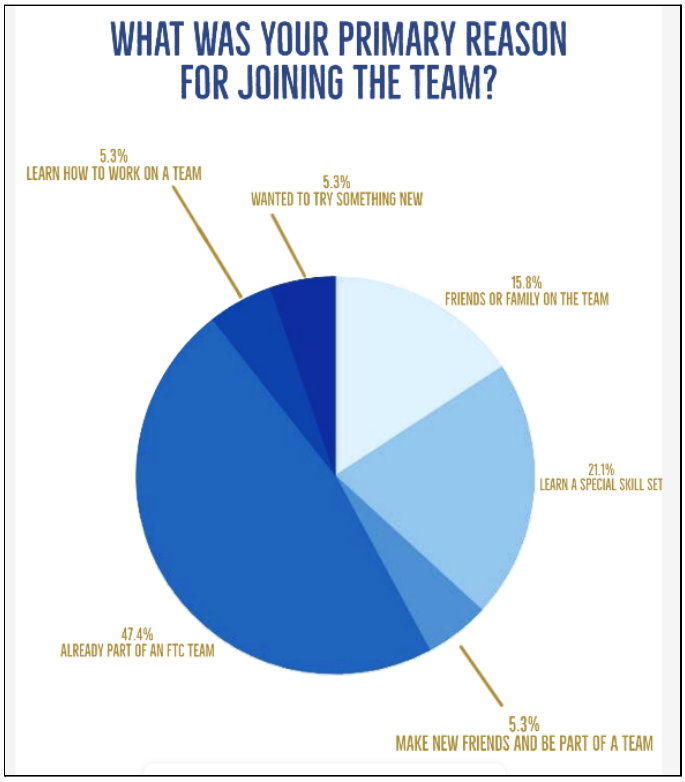
Cyber Cats Team Values:

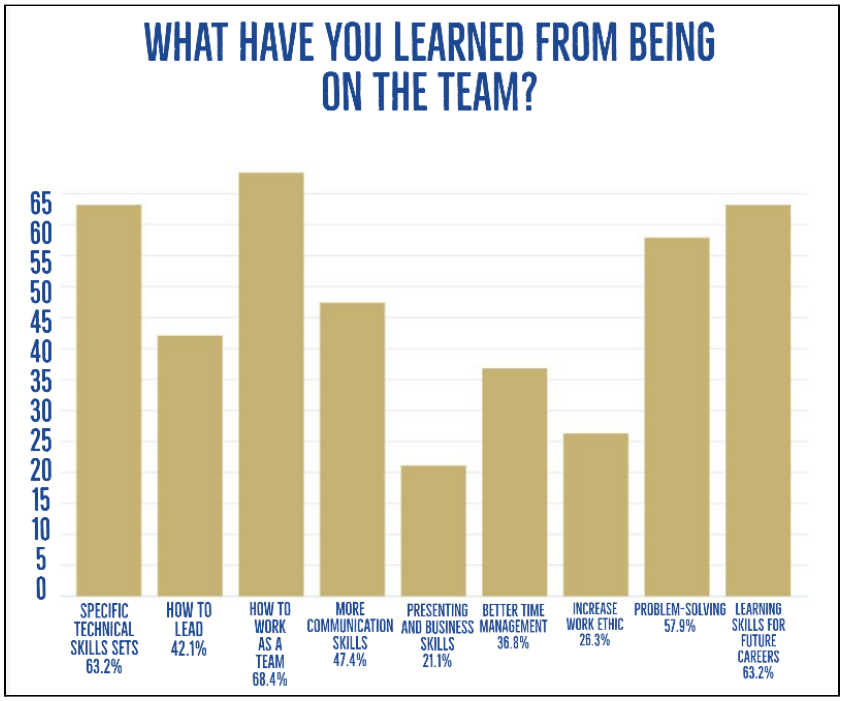
1.3 Optimizing Student Learning

We want our students to get all that they can out of the *FIRST* robotics experience. One of the primary 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 to have the students do the majority of the work rather than the mentors; that way, we achieve *FIRST* learning goals.

1.4 Team Survey

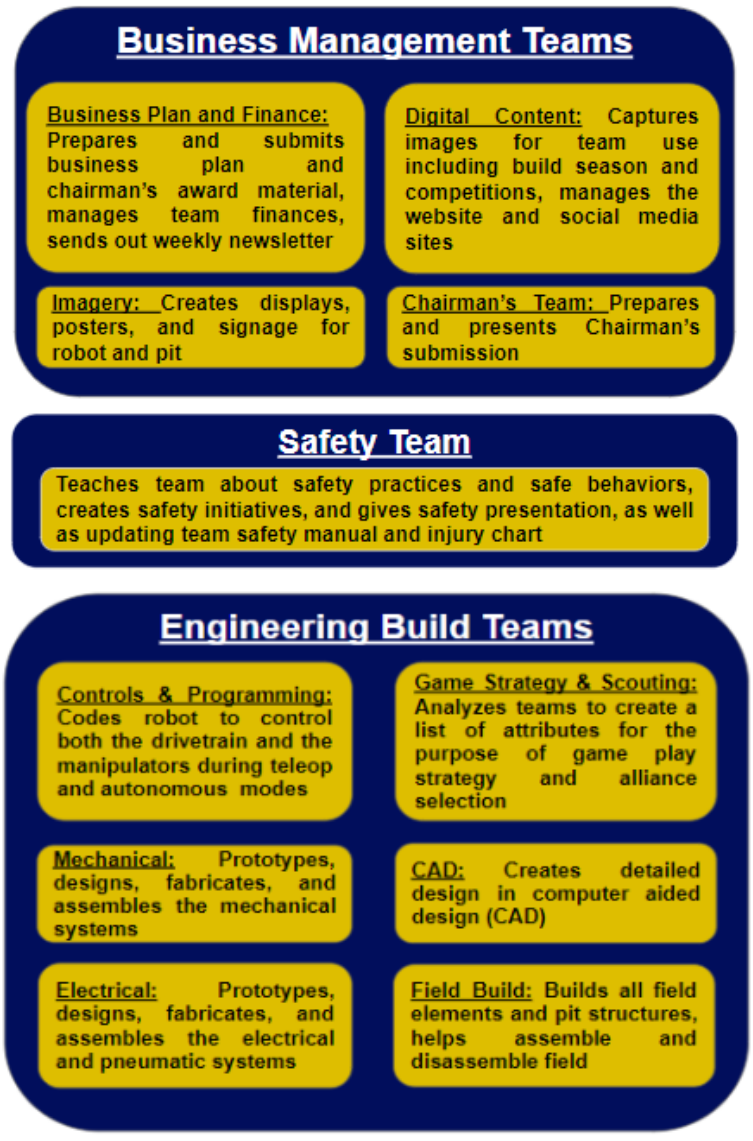
Throughout the years, we have found that students join our team for many reasons. To better understand these reasons, we conducted a survey of most of our team members to figure out their primary reason for joining the team. We also asked team members what they had learned from being on the team to ensure that we were teaching students about a wide variety of topics. We provided an optional question asking whether students had more specific subjects they were interested in learning about. Three people responded, saying that they wanted “to learn more about animation by helping make something for the Animation Award”, “more technical/mechanical skills”, and “more about engineering and more about the robot”. These results are encouraging because it shows that our students joined the team for diverse reasons, are learning a variety of topics, and aspire to learn even more than what they already know, all of which are goals we strive to reach. All the data we collected is shown below.





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 to ensure team safety. In order to ensure collaboration between sub-teams, there is one overall student lead for each of the engineering and business fields. Students get placed into sub-teams of their choice at the beginning of the season, which helps students build and work successfully in their own comfortable environments.



2.0 RISK ANALYSIS - (Martha → now Abbey)

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 visualize 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 can 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.

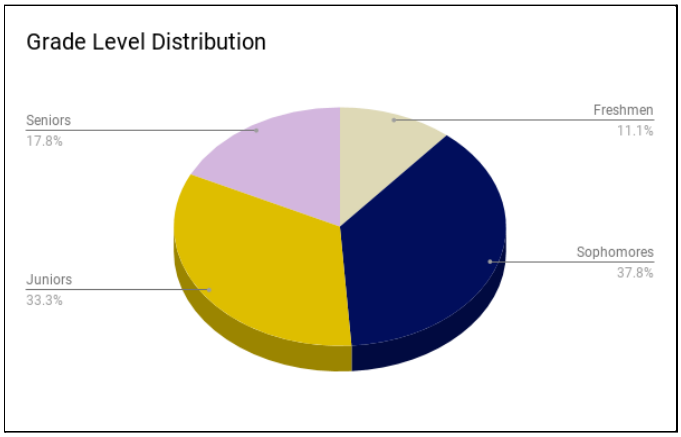
One of the main threats to the team is the potential loss of sponsors and funding. To avoid this, we maintain close contact with our sponsors through our weekly newsletter, “The Weekly Roar” as well as our “Meet the Cyber Cats” presentation day. We believe that if our sponsors are aware of what they 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.

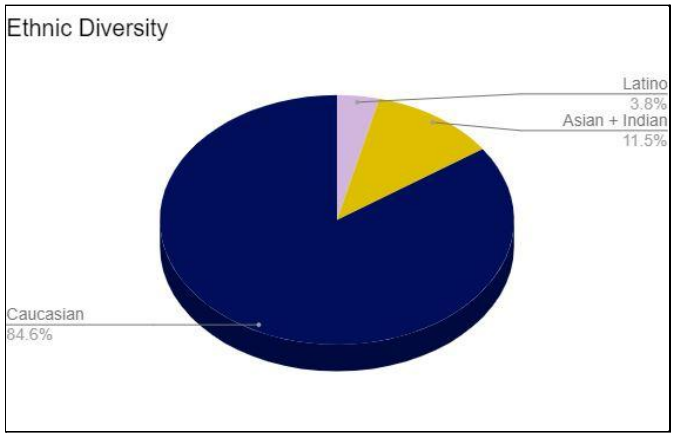
SWOT Analysis

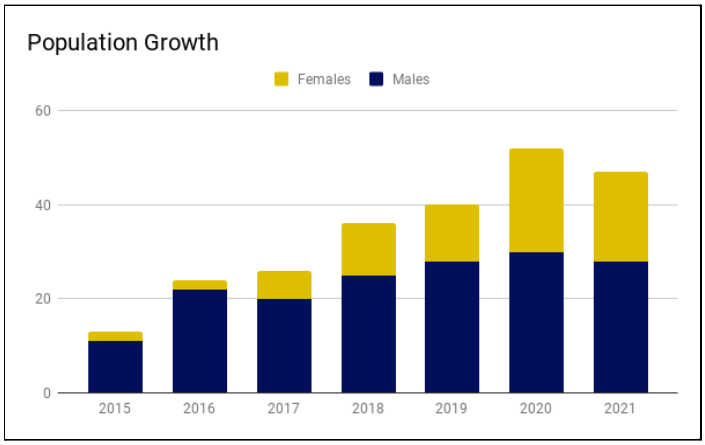
Strengths	Weaknesses
• **Constant/stable team membership** • Low student to mentor ratio **(double checked data)** • Student led sub-teams • Strong collaboration partnerships with other teams (**bulldogs, feds**... • ~~Versatile build room~~ • Solid budget and strong sponsorships **(confirm sponsors)** • Strong foundation to inspire others • Diversity of ideas and interests • Gender diversity **(double check data)** • Experience at all levels of competition	• Limited Space • Limited availability of computers and other technological tools • **Lack of separation of workspace for the sub-teams** • **Less leadership experience for student level**
Opportunities	**Threats**
• Expansion of real estate **(COVID issue)** • Increase of community outreach (**COVID issue**) • Increase of mentoring other teams **(Covid issue)** • ~~Many new students~~ • Exposure to new students and sponsors (**COVID**)	• Loss of sponsors • Loss of students • ~~Large graduating senior class~~ • Statewide competitors • Loss of mentors • Loss of build time due to **weather** **COVID** Limited Face to Face interaction

3.0 DIVERSITY AND INCLUSION - (Meadow)

It has been proven through multiple streams of research that diversity in teams will lead to extraordinary results and this is no exception to our team. Our inclusion philosophy is to seek diverse opinions from all members of the team in both engineering and business aspects. 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 nineteen in 2021. Our team members mentor within the community to inspire young girls to join a *FIRST* team and get involved in STEM. Each year, we have participated 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 further expanding 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. 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.







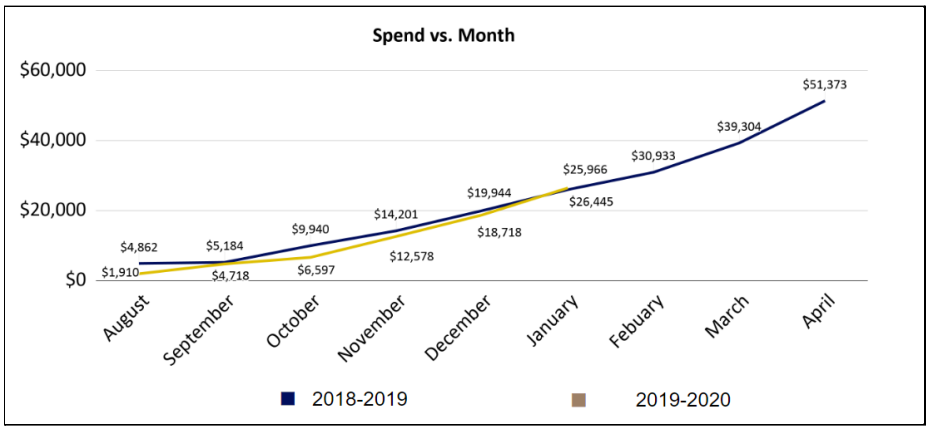
Above: Team Demographics

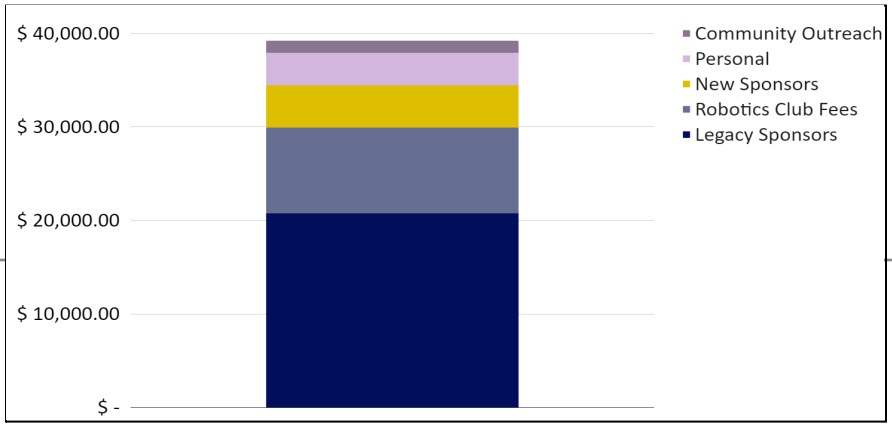
Below: Bloomfield Hills Girls Competition (2019)

4.0 TEAM FINANCES - (Alex)

4.1 Budget and Spend Plan (2019-2020 season as reference due to Covid)

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. Because of COVID-19, the plans have changed this year in terms of budgeting. We have saved a greater portion of our budget from the previous year. This has also been counteracted by the loss of sponsors this year, which has thankfully overall not been enormous.





4.2 Sponsors - (Alex ???)

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 (Martha)

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 - (Karoline)

In the 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 47 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. Every year, 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, 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 (Mia)

Our goal is to inspire future engineers, programmers, and business leaders to promote success for future generations. With the help of local 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

2020
Quality Award: Macomb District
District Champion: Macomb District

Appendix B : Team Origin

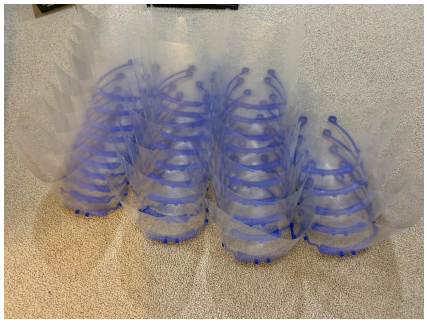
Before the official formation of our team, a few students at our school were interested in participating in a robotics program. However, because there was no program at our home high school, they participated in *FIRST* robotics with the team at another high school in our district, Adams High School. Eventually, there were enough Stoney Creek students on the Adams 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 discussing 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 also developed a logo. Our team was off to a promising start.

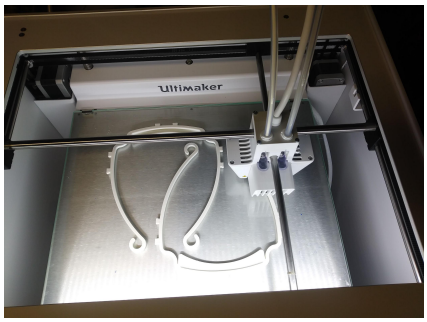
In the fall of 2016, we were granted our own build room within Stoney Creek High School. When we first got the room, it was vacant, so we were able to design a room appropriate for a *FIRST* robotics team. We decided to divide the room into two separate work areas for the Business and Robot Build teams. We devoted much 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 : Covid

Face/Shields - 3D printing (w/photo)



At the start of the pandemic, we noticed a shortage of medical supplies in hospitals in our local area. To help solve the issue, we donated 525 face shields and face masks to various essential workers; we also 3D printed mask hooks to alleviate the pain of medical workers.

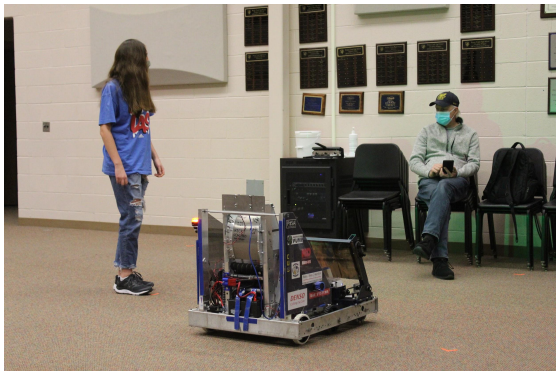


Virtual meetings - How to keep safe, Challenges

When in-person gatherings are unnecessary, we encourage virtual meetings to keep our students and mentors safe. Participation in this year's At Home Challenges has been almost completely virtual, giving students the opportunity to be involved in Robotics despite not being able to attend in-person meetings.

Safety (in room w/photos)

When in-person gatherings are necessary, we follow strict regulations to keep our students and mentors safe. All people fill out a health screening form when they enter the building for contact tracing in case there is an outbreak. We also wear masks and keep six feet apart when possible to minimize the chance of infection. At the end of each meeting, we disinfect all surfaces used.



Strengths	**Weaknesses**
• **Constant/stable team membership** • Low student to mentor ratio **(double checked data)** • Student led sub-teams • Strong collaboration partnerships with other teams (**bulldogs, feds.**.. • ~~Versatile build room~~ • Solid budget and strong sponsorships **(confirm sponsors)** • Strong foundation to inspire others • Diversity of ideas and interests • Gender diversity **(double check data)** • Experience at all levels of competition	• Limited Space • Limited availability of computers and other technological tools • **Lack of separation of workspace for the sub-teams** • **Less leadership experience for student level**
Opportunities	**Threats**
• Expansion of real estate **(COVID issue)** • Increase of community outreach **(COVID issue)** • Increase of mentoring other teams	• Loss of sponsors • Loss of students • ~~Large graduating senior class~~ • Statewide competitors • Loss of mentors

(Covid issue) ● ~~Many new students~~ ● Exposure to new students and sponsors (**COVID**)	● Loss of build time due to **weather** **COVID** Limited Face to Face interaction

Appendix D : Team Contact Information

Website: www.cybercats5436.com
General Email: schscybercats@gmail.com
School Name: Stoney Creek High School
School Address: 575 E Tienken Rd, Rochester Hills, MI 48306