

OxBE4

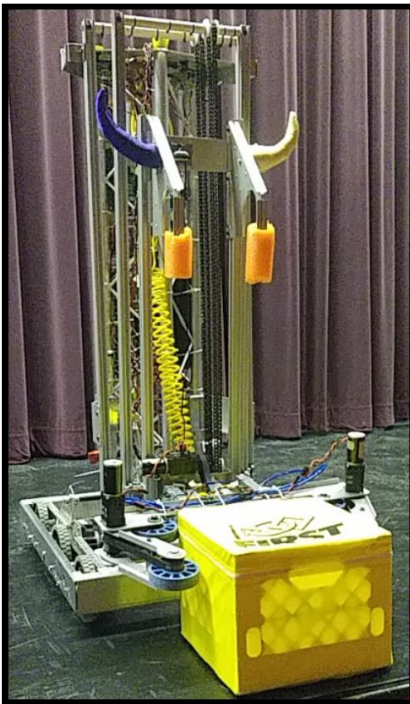
Ballston Spa High School Robotics

FIRST Team 3044



OxBE4 - Team 3044

“Inspire, Educate, Cooperate”



2018

Ballston Spa High School

220 Ballston Ave.

Ballston Spa, NY 12020

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1.0 Executive Summary

FIRST Robotics Competition (FRC) Team 3044 is one of Ballston Spa High School's varsity teams, and our sport is building robots. We are located in Ballston Spa, New York. Our mission is to educate, inspire, and develop students for success in the 21st century through hands-on activities centered primarily around STEM subjects. We also try to have a positive impact on our community through a variety of activities. We engage our students in activities that are both fun and cognitively stimulating. Our team was founded in 2008 and over the past 10 years, has quadrupled in size, and spirit. Today we have 41 students and 37 mentors.

Our team set a variety of goals for the FIRST Power Up season, some of which include producing a robot that performs well at competitions, organizing a team that fosters self confidence, effective communication skills, leadership and gracious professionalism, and to attend the world championship held in Detroit. In addition to striving toward these goals, our team continues to support our high school by collecting donations for students in need; our outreach extends outside of our school community to supporting our military through Adopt a Soldier and purchasing diapers to support the Haiti based program, Keep Kids Klean.

In the 10 years that we have been a team, 0xBe4 has had many different achievements, two of our biggest having been a regional competition at WPI in 2013 and winning Chairman's award at the New York Tech Valley Regional in 2017. In addition to these we have won multiple other awards such as the Team Spirit Award on a multitude of occasions, as well as the Industrial Safety Award and the Industrial Design Award.

Over the past 10 years we have demonstrated the impact and value of STEM education and the FIRST program at over 40 different events across 18 different venues. From expos at GE and GLOBALFOUNDRIES, to showcases at Chamber of Commerce events from Clifton Park to Saratoga Springs. We have also performed demos at local parks and run a Lego academy summer camp in August.

A successful season for Team 3044 relies on a stable financial plan; our total income is projected to be \$34,500. We are very fortunate to have support (financial and use of facilities) from our school district. About half of total support is from corporate sponsors, such as Ballston Spa National Bank and Bechtel, while the other half comes from team fundraisers. This money is put to use for robot parts, registration fees, and transportation to competitions.

As for the future, team 3044 plans on increasing our number of members and mentors, strengthening our relationship with our community and sponsors and having more fun!

2.0 Our Mission

Team 3044's mission, through a cooperative cross-generational team of students and mentors, is to educate, inspire, and develop students for future success in the 21st century through hands-on activities primarily centered around STEM subjects with a focus on the FIRST program.

3.0 Who We Are

Nickname: 0xBe4 (hexadecimal code for our team number)

Team Number: 3044

Founded: 2008

Team Members: 41 (from 9-12th grades)

Mentors: 37

Alumni Mentors: 2

School: Ballston Spa High School

Location: 220 Ballston Ave Ballston Spa, NY 12020



See appendix for more information about our team.

4.0 What We Do

- Design, develop and build robots for FRC.
- Learn skills in the categories of problem solving, manufacturing abilities, programming, creativity, cooperation, media creation, communication, and business management.
- Seek opportunities to acquire scholarships and internships.
- Support rookie teams as well as students in the younger FIRST programs in our district.
- Support our community by volunteering as a team to help enhance the place in which we live.

4.1 Deployment of Resources

Our team continually attends school and community events at which we showcase our robot and provide information about our team and FIRST. This helps our team spread the message of FIRST and excites students to join our team. Our team also runs a FIRST Lego League (FLL) camp in August, closely mentors local FLL teams, and hosts meetings with our district's FIRST Technology Challenge (FTC) team. These activities help ensure a stream of future members. Our subteams consist of both upperclassmen and underclassmen which helps the younger members learn from the older members. This organization during build season, along with workshops in the fall to teach all of our members the engineering skills necessary for their success throughout the year, helps each team member get the most out of their FIRST experience. We also do our best to make our team feel like a safe and positive environment where all of our students are treated equally. Based on our high number of alumni who are still involved in the team, we believe students get the best FIRST experience possible after their time on 0xBe4.

4.2 Safety

Safety is an extremely important aspect of our team. We have a safety captain who makes sure that every member of the team develops the necessary skills to properly manage machinery by administering an extensive safety test, created by our team using FIRST safety guidelines. Every member of our team had to receive a 100 on the test before they could use any machines. She is also responsible to make sure that we comply with high safety standards at competitions.

Our team has won numerous awards for the safety we ensure at meetings, in our pits, and at competition. We received the Industrial Safety Award at the Finger Lakes Regional in 2016 and again at the New York Tech Valley Regional in 2017.

4.3 Outreach

Helping our community is a huge part of our team's activities. 0xBE4 does much of this work on the "off" season – fall and late spring. Some of the things our team helps out with include:

Mentoring Local FLL Teams:

- Students on team 3044 have the opportunity to mentor our local FLL teams in the fall
- Great opportunity to inspire the younger generation of FIRST

Host FLL Qualifying Tournament:

- Our team hosts an FLL qualifying tournament in early December in our middle school
- Team members volunteer to be score runners, timers, emcees etc
- Hosting this event shows our dedication to both our community and to FIRST

Code-A-Thon:

- Team members teach elementary school students how to code
- The elementary students are introduced to Scratch, a basic drag and drop coding language
- Our team members encourage the students to join their school's FLL teams

Host Robot Rumble:

- Robot Rumble is an off season competition that our team hosts
- Our entire team volunteers at the event

Adopt a Soldier:

- Our team collects items such as snacks, socks and toiletry items to be donated to Operation Adopt a Soldier

Keep Kids Clean:

- Keep Kids Clean provides children in Haiti with clean diapers
- Our team collects diapers and donates them to the program

Scottie's Closet:

- Scottie's Closet is an event where families are invited to "shop" for free gently used clothes, accessories, books, etc
- Members of our team are asking to donate some gently used items for the event

Scottie's School Supplies:

- Like Scottie's Closet, Scottie's School Supplies is an event for families to "shop" for free school supplies
- Our team helps organize the event
- Members of team 3044 are asked to donate to the event as well

Local Parades:

- Malta Community Day
- Freshmen orientation
- Empire State Plaza back to school expo
- Taste of Malta
- GLOBALFOUNDRIES open house

5.0 Team Accomplishments

5.1 Team Origin

At Ballston Spa High School in Ballston Spa New York, Team 3044 or 0xBe4, was founded 10 years ago by teacher Greg Roberts. Originally called the "Robonators" our name was updated to 0xBe4, which is "3044" in hexadecimal code. "0x" is the notation for hexadecimal code and "Be4" is "3044." Starting off as a small team of 10 students and 6 mentors, our team has more than quadrupled its original size with 41 members in the 2017-2018 school year.

Our team was formed in 2008 to bridge the gap between science and technology programs in the school district. As a rookie team, we were presented with a variety of challenges that we overcame in order to participate in FIRST events. The most difficult challenge was the demanding financial need to support a team. However, through the help of corporate sponsors and numerous fundraisers, our team had a very successful rookie season. Another challenge faced by Team 3044 was finding and securing enough students and mentors to establish an efficient and sustainable team. As the team's student membership grew, more parents became both engineering and non-engineering mentors – many of whom have continued mentoring beyond their son or daughter's graduation from the team. This dedication by our volunteer mentors has greatly supported our team through a successful decade.

The table that follows details the FIRST challenges 0xBe4 has met over the years, along with detailing the competitions we have participated in and awards we have won. In addition to the successes on the competition fields, we are very proud of our accomplishments in the area of outreach (reviewed in section 4.3) which have increased community awareness of the FIRST program and inspired younger students to become excited about FIRST.

School Year	FIRST Game	Robot Name	Competitions / Other tidbits
2008 - 09	Lunacy	Vince	<ul style="list-style-type: none"> ❖ Team 3044 was born ❖ Finger Lakes Regional: Lunacy (Record 3-4-1) ❖ Promoted FIRST at regional STEM Expo
2009 – 10	Breakaway	Rob0xxy	<ul style="list-style-type: none"> ❖ Finger Lakes Regional: Breakaway (Ranked 35, Record 3-5-3) ❖ BattleCry at WPI, MA (off-season event)
2010 - 11	Logomotion	Rosie & Squee	<ul style="list-style-type: none"> ❖ WPI Regional: Logomotion (Ranked 24, Record 4-9-0) ❖ Hosted Ballston Spa School District’s FLL Expo-Scrimmage ❖ 1st Place Grant: Capital Region Nanotechnology HS
2011- 12	Rebound Rumble	0xsanity	<ul style="list-style-type: none"> ❖ Finger Lakes Regional: Rebound Rumble (Ranked 14, Record 7-6-0, Regional Finalist) ❖ BattleCry at WPI, MA (off-season event) ❖ Hosted the Capital Region Robotics Picnic ❖ RahChaCha Ruckus at Rochester, NY (off-season event) ❖ Hosted Ballston Spa School District’s FLL Expo-Scrimmage
2012 - 13	Ultimate Ascent	Unorthod0x	<ul style="list-style-type: none"> ❖ 1st Place: Hudson-Mohawk ASME & NY AIAA US FIRST Award ❖ WPI Regional: Ultimate Ascent (Ranked 30, Record 10-9-0, Regional Winners) ❖ Team Spirit Award by Chrysler at WPI Regional) ❖ FIRST Championship: Archimedes Division (Ranked 53, Record 4-5-0) ❖ RahChaCha Ruckus at Rochester, NY (off-season event) ❖ Restless Spirit Award at RahChaCha Ruckus event
2013 -14	Aerial Assist	Equin0x	<ul style="list-style-type: none"> ❖ 3rd Place: Hudson-Mohawk ASME & NY AIAA US FIRST Award ❖ Hosted FLL Qualifying Tournament at Ballston Soa High School ❖ NY Tech Valley Regional: Aerial Assist Qtr-Finalist ❖ NY Tech Valley Regional: Team Spirit Award ❖ Finger Lake Regional: Aerial Assist Finalist ❖ Finger Lake Regional: Team Spirit and Industrial Safety Awards ❖ Hosted Tech Valley Robot Rumble
2014- 15	Recycle Rush	R0xanne	<ul style="list-style-type: none"> ❖ New York Tech Valley Regional: Recycle Rush (Rank 10) ❖ FIRST Dean’s List Finalist (Samantha McComb) ❖ Finger Lakes Regional (Ranked 26)

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2015 -16	FIRST Stronghold	0xcalibur	<ul style="list-style-type: none"> ❖ New York Tech Valley Regional: Ranked 13th ❖ New York Tech Valley Regional: Team Spirit Award ❖ Finger Lakes Regional: Ranked 15th (Regional Finalist) ❖ Finger Lakes Regional: Industrial Design Award ❖ Finger Lakes Regional: Industrial Safety Award ❖ Finger Lakes Regional: Wildcard ❖ Tesla Division: Ranked 46 (Record 5-6-0) ❖ RahChaCha Ruckus: Ranked 28 (Record 2-5-0) ❖ Tech Valley Robot Rumble: Ranked 24 (Record 5-7-0) ❖ Tech Valley Robot Rumble: Finalist ❖ Tech Valley Robot Rumble: Gracious Professional Award
2016-17	Steamworks	Artif0x	<ul style="list-style-type: none"> ❖ Won Chairman's Award at New York Tech Valley Regional ❖ Won Safety Award at New York Tech Valley Regional ❖ Rank 20 with a record of 7-9-1 at New York Tech Valley ❖ Won Imagery Award in honor of Jack Kamen at Hudson Valley Regional ❖ Rank 20 with a record of 7-9-1 at New York Tech Valley ❖ Won Imagery Award in honor of Jack Kamen at Hudson Valley Regional ❖ Rank 40 with a record of 3-7-0 at Hudson Valley Regional
2017 - 18	Power Up	Lunchb0x	<ul style="list-style-type: none"> ❖ Will be attending the FIRST Central New York Regional ❖ Will be attending the FIRST New York Tech Valley Regional

Team 3044 Competition Robots



2008-2009



2009-2010



2010-2011



2011-2012



2012-2013



2013-2014



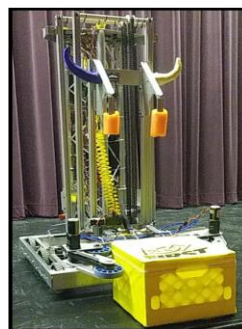
2014-2015



2015-2016

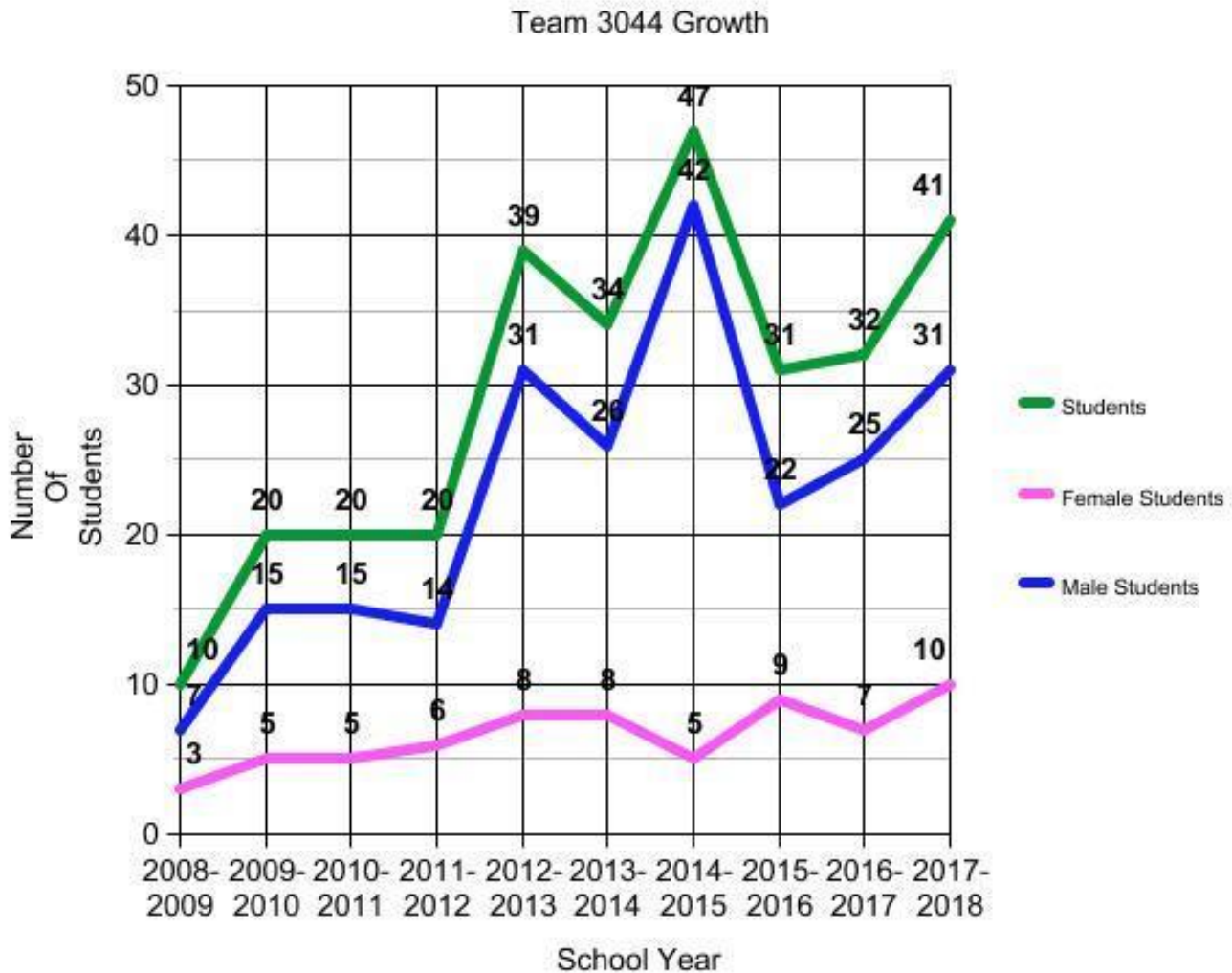


2016-2017



2017-2018

6.0 Team Growth



7.0 Sponsorship

Our team receives financial support from a variety of corporate sponsors. These sponsors receive recognition on our team shirts, on our website, on our robot and in other promotional publications that we distribute at competitions and at community events. In total, about 55% of our team's income comes from our sponsors. We are very lucky to have such a great relationship with our sponsors (pictured on next page). Their contributions are essential to our success.

**BALLSTON SPA
CENTRAL SCHOOL DISTRICT**

Educating Everyone Takes Everyone



GLOBALFOUNDRIES

GLOBALFOUNDRIES / Town of Malta Foundation, Inc.



8.0 Relationships

Members:

Team 3044 over the past year has become much more than just a FRC team, we've become a family. The teamwork that has developed is remarkable. To inspire students to join FRC, team members work with students involved in both FLL and FTC in order to spark younger students' interest in FIRST. We also are working on a brand new recruitment video. We do our best to make sure every student has a positive and educational experience on team 3044.

Community/Sponsors:

Throughout our 10 years of being a team, 0xBe4 has been extremely active within our community. Through service opportunities and participating in community events, we have been able to show both our sponsors and our community that we are committed to the core principles of FIRST. In doing this, our team has developed a mutual feeling of pride and respect within Ballston Spa.

Mentors:

Our mentors are divided into two groups: The engineering mentors and the non-engineering mentors. We have a total of 37 mentors who actively participate in every aspect of our team including engineering, award submissions, fundraising, business plan writing, and feeding the team! Mentors come from a variety of backgrounds, supporting the team with expertise in many areas from engineering to finance.

9.0 Marketing Plan

Our marketing plan is designed to support our goals for robot building and for spreading awareness of the FIRST Robotics program throughout our community.

Target audience

- Students in lower grades to join younger FIRST programs
- Incoming 9th grade students and transfer 10th, 11th, and 12th grade students
- Corporations in our community to attract sponsorships and mentors
- Other teams at competitions to attract alliance partners during competition
- Judges

Methods of communication:

- Social Media (Website, Twitter, Facebook)
- Flyers
- Business cards
- Providing talking points to acquaint team members
- School District Office of Advancement to increase sponsorship reach

Messages:

- To Students-Learning, challenging, fun
- To Sponsors and mentors- Support students, encourage STEM education
- To Competitors and Alliances- Ability to win, technical capabilities

10.0 Goals

- Produce a robot that meets or exceeds the performance requirements as defined by FIRST for each season's game.
- Organize a team that collectively has the resources and technical skills needed to produce the robot
- Create a team culture that will allow each member to have a challenging assignment utilizing their current skills and to foster self-confidence, effective communications skills, leadership and "gracious" professionalism
- Inspire and support grades 4-8 students to become part of a FIRST Lego League and FIRST Tech Challenge
- Engage the community outside of school to support FIRST and the STEM programs
- Attend FIRST Championship in Detroit

11.0 Analysis of Strengths and Challenges**Strengths:**

Strong mentor group made up of alumni, parents, and professional engineers. Unbeatable team spirit showing pride in FIRST, our school and our town. Gracious professionalism that we try to exhibit when working with each other and also at competitions. Strong support from our school administration.

Areas of Improvement:

School, family and personal obligations making it difficult to maintain the intense schedule during build season. Not as much cross-training/communication as needed to make sure that each sub-team understands what other sub-teams are working on.

Opportunities:

Mentoring younger teams (FTC and FLL) in our district. Helping and mentoring new rookie teams in our region. Lots of engineering firms in area to find new mentors.

Challenges:

Members who leave during build season when the schedule overwhelms them. Not enough mentors who can commit to the extreme time demands. Economic downturns limiting corporate sponsorship (slightly more than half our budget). Fundraising to the same audience and at the same time as other groups from our school. Cost of parts for the robot.

Risk Mitigation Plan:

In order to ensure 0xBE4's sustainability, team members are always on the lookout among classmates and friends for those who may be interested in joining Team 3044; asking parents and our current mentors to find new mentors; working with our district's advancement office to develop our own list to increase corporate sponsorship; possible collaboration with other school groups or other teams for local fundraisers recycling parts from year to year.



12.0 Financial Statement

Team 3044 receives financial support from its school district as well as corporate sponsors who receive recognition on the team’s website, promotional material, and on the robot itself. The Team works with staff from the school district advancement office to establish relationships with corporations. In addition, the Team holds several “grassroots” fundraisers during the off-season, including a silent auction/local restaurant “tasting” night and serving breakfast at an Applebee’s restaurant just to name two. The team does not charge any participation fee so our fundraising is extremely important to allow all students to participate and to attend competitions without charge.

Revenue		
Sponsors	\$19,000	
Fundraisers	\$15,540	
Total Revenue		\$34,500
Expenses		
Advisor Stipends	\$4,800	
FRC Registration Event 1	\$5,000	
FRC Registration Event 2	\$4,000	
Robot Parts Addition from kits to Registration	\$3,200	
Bus Transportation Regional 1	\$900	
Bus Transportation Regional 2	\$2,700	
Hotel	\$4,500	
Competition Lunches	\$1,800	
Pit Materials	\$1,000	
Off-Season Events	\$2,040	
FTC, FLL Registrations	\$3,000	
Contingency	\$1,600	
Total Expenses		\$34,500

13.0 Future Plans

Funding:

Our success at reaching FIRST's World Championship the past two years has helped maintain our sponsorship base. Our school district's administration works with corporations to secure financial support for our team and our district's robotics program, however, we also look to our parent base for sponsorship opportunities from their employers. We hope to formalize a program of identifying local companies that we can approach along with our advancement office staff. In addition, we plan on conducting a cost/benefit analysis of our fundraisers to ensure we use our time and volunteers efficiently while still maximizing profits. We also want to do new fundraisers in the future such as a carwash.

Team:

We plan on increasing the number of members on our team in the next 3 years. To do this, we are currently working on a recruitment video to excite students about our team and FIRST, and will continue having displays at orientation events for new students. Additionally, we run "Lego Academy" for a week in August at which team members teach younger students using programmable LEGOS. During the school year, team members also mentor FLL teams in our district to inspire the younger students to eventually become FRC members.

Community Outreach:

Community outreach is a huge aspect of our team. We participate in many community events (parades, local festivals, fundraisers by other organizations) throughout the whole year. In the future, we expect to continue our participation at these events while spreading our reach even further to establish relationships with other teams and communities.

14.0 Contact Us

Email: BSHSRoboticsTeam3044@gmail.com

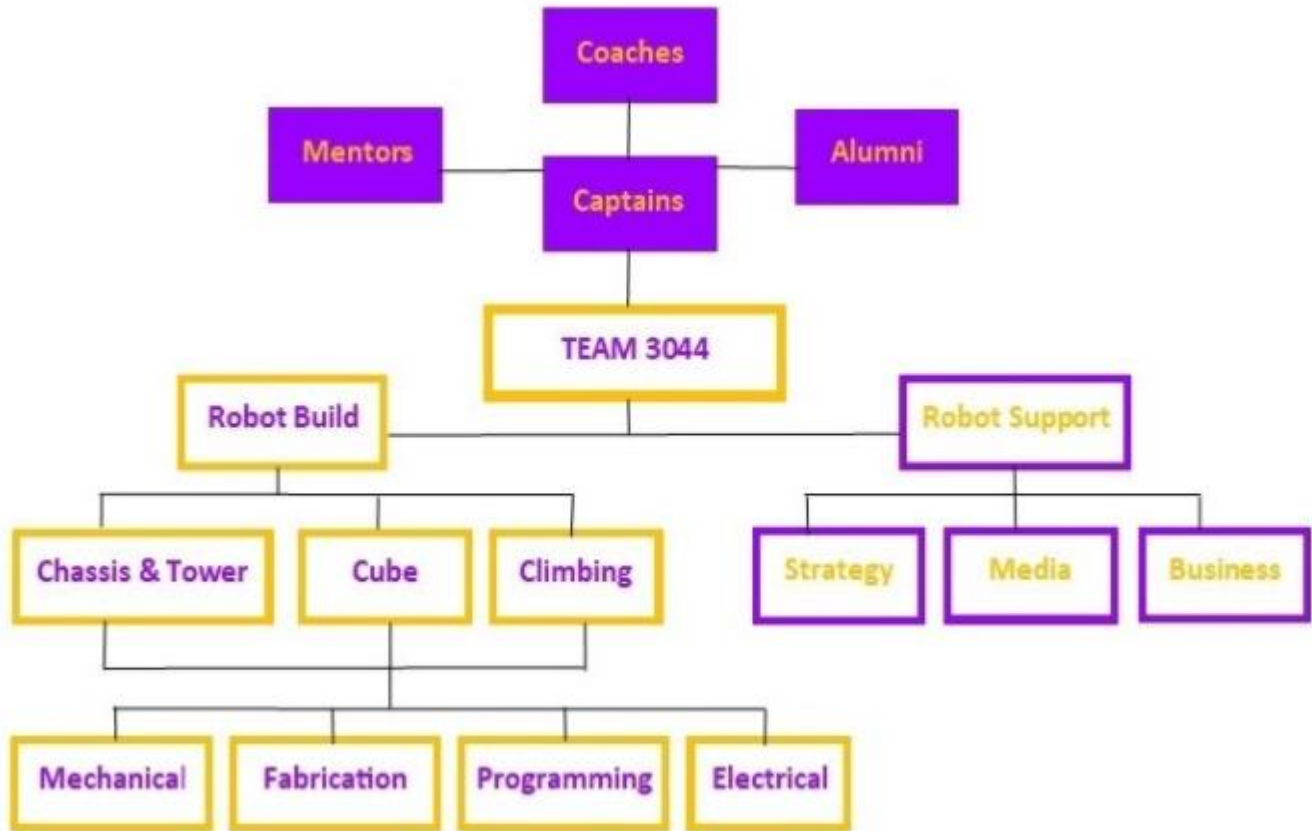
Website: FRCteam3044.team

Facebook: US First Robotics Team 3044

Twitter: @0xBe4

Appendix

1. Organization Chart for Team 3044, 0xBE4



2. The Team

Team 3044: 9th – 12th graders, many of whom have been part of FIRST since elementary/middle school (FLL/FTC) due to our district-wide FIRST program. Here is who we are and what we do:

Seniors

Maddie W. - Co-Captain, Electrical

Dylan J. - Co-Captain, Strategy

Zachary B. - Electrical

Delaney B. – Media Project Manager

Cassie C. - Safety Captain

Brit D. - Pneumatics, Chairman’s Award, Fabrication

Joe I. - Electrical Captain

Alexandra L. - Media

Anthony L. - Fabrication, CAD, Dabbles with Media

Ethan Mi. - Intake Subteam Leader

Emily R. – Business Plan

Jake R. – Business Plan

Dylan S. - Climber, Elevator, Mechanical

Kate W. - Chassis Subteam Leader, Chairman’s Award Team

Juniors

Michael C. - Elevator Subteam Leader, Chairman’s Award Team

Jacob C. - Programming

Ryan C. - Brake Subteam Leader

Evan C. - Electrical, Dabbles with Media

Anthony F. - Strategy, Scouting

Dom G. – Media/Webmaster

Colin M. - Programming Subteam Leader

Daric N. - Electrical

Katie O. - Climbing Subteam Leader, Chairman’s Award Team

Ethan T. - Electrical, Scouting, Strategy

Sophomores

Alec D. - Electrical

Justin S. - Programming

Freshmen

Cooper B. - Mechanical

Stephen G. - Mechanical

Chad G. - Electrical

Ethan Mo. - Chassis

Garrett M. - Programming

Anthony P. - Mechanical

Kailyn R. - Electrical

Mason R. - Mechanical

Damon S. - Mechanical

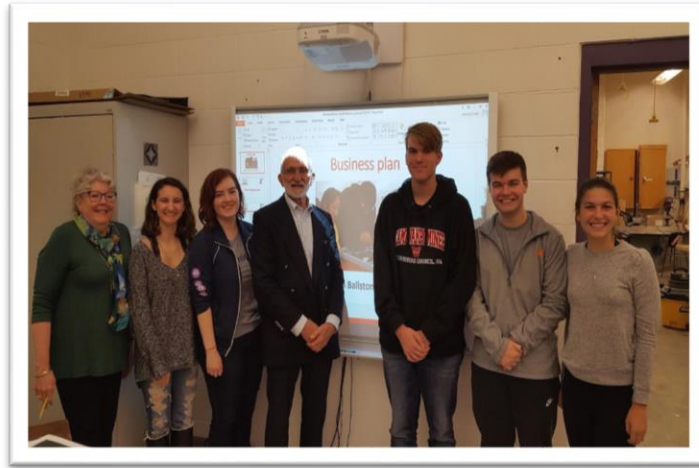
Nathan S. - Mechanical, Bill of Materials, Cost Analysis Worksheet

Elijah S. - Intake

Shelby W. - Videographer, Media

Liam W. - Mechanical, Fabrication

**Roster as of 2/20/18 and reflects that 2 members “retired” during build season.*



Thank you Professor Mel Chudzik for all your help with our Business Plan!

Team 3044 Business / Media Team