



Louisville Centrons

FIRST Team 7516 Business Plan 2021-2022

Central High School Magnet Career Academy

www.louisvillecentrons.com

Central High School Magnet Career Academy

Established 1870

1130 West Chestnut Street
Louisville, Kentucky 40203

Vision:

Relentlessly continuing our tradition as leaders of positive social change.

Mission:

Establish high academic expectations for all students,
Ensure post-secondary success for all students,
Engage in culturally responsive living, and
Encourage passionate pursuit of global citizenship.



The 2021-2022 Centrons Robotics Team!



Table of Contents

1. Executive Summary	1
1.1 Introduction	1
1.2 Our Team’s Mission Statement	1
1.3 What is First?	1
1.4 About Central High School	1
1.5 Team Goals	1
2. Team Information	2
2.1 Fourth Year	2
2.2 Location	2
2.3 Mentors	2
2.4 Student Demographics	2
2.5 Team Sponsors	2
2.6 Team Growth	3
2.7 Collaboration With Other VEX Teams	3
3. Structure and Organization	4
3.1 Sub Teams	4
3.2 Executive Team	4
3.3 Engineering Team	5
3.4 Programming Team	6
3.5 Business Team	7
3.6 Safety	8
3.7 Schedule	8
4. Outreach	9
4.1 Summer/Fall Outreach	9
4.2 Spring Outreach	9
5. Marketing	10
5.1 Collaboration with Sports Marketing Magnet	10
5.2 Sponsors	10
5.3 Social Media	10
5.4 Promotional Items	10
6. Proposed Budget	11
6.1 Projected Funding Sources	11
6.2 Estimated Expenses	11

7. Photos	12-13
8. Sponsors	14
9. Robot Dedication	16

1. Executive Summary

1.1 Introduction

This document is our proposed plan for our fourth year as a FIRST Robotics FRC team. It is a guideline for financial planning and a foundation for our instructional focus.

1.2 Our Team's Mission Statement

"The mission of the Louisville Centrons FIRST Robotics Team is to allow our students to explore a synthesis of academic disciplines, including Engineering, Informational Technology, and Business Marketing. As a team, our members will work to design, build, and market a competitive robot while supporting the ideals of FIRST."

1.3 What is FIRST?

The For Inspirational and Recognition of Science and Technology (FIRST) organization was founded by Dean Kamen and Woodie Flowers in 1989. The intention of FIRST is to engage students into the fields of engineering and technology by creating a cooperative robotics competition. Their website is <https://www.firstinspires.org/robotics/frc>.

1.4 About Central High School

- Central High School Career Magnet Academy is located in Louisville's historic Russell neighborhood just west of the Central Business District. Serving our community for 150 years, Central began in a time dramatically different from now; - a time of separation, inequality, and injustice for many people. In 1870, a group of leading black citizens appealed to the Louisville Board of Education for free schools for their children. The Board of Education opened two buildings in October for educating "children of the Africa race," to be financed by taxes collected from the black community. Thus began what eventually was to become Central High School. Consequently, Central has a rich history of academic and athletic achievement through many generations, and many students have parents, grandparents, or other family members who attended Central. This results in a deep sense of pride and tradition within the school and surrounding community. Past graduates and faculty members include Muhammed Ali, State Senator Georgia Davis Powers, Lenny Lyles, and Lyman T. Johnson. In 1989, Central transformed into a magnet career academy offering students a four-year pathway of pre-college curriculum. Our technology magnet program was founded in 1999, the year that the school was wired for the internet.

2.1 Team Goals

Our team plans to restart our robotics program after the long year of non-traditional instruction. Our goal is that each student gain in-depth knowledge of computer systems, mechanical engineering, and coding. As in the past, we also intend to leave funding for the 2023 program.

3. Team Information

3.1 Fourth Year

The pandemic was hard on our team. In March of 2020, we were weeks away from attending the Smoky Mountain Regional. Our robot was almost ready, we had our hotel reservations set, and we had all our drivers and trailers ready to go. Then the bottom dropped out. It was crushing for our students. We paid our team dues last year, but our students did not meet in-person until the last eight weeks of the school year, so once again we missed any competition. This is an obvious rebuilding year, but we do have a good core group of seniors who were involved in our inaugural year who are setting the course for the newer members.

3.2 Location

The Louisville Centrons is a school team of Central High School Magnet Career Academy located in Louisville, Kentucky. We operate out of our makerspace, The Colony.

3.3 Mentors

Our mentors from last year are returning. Coach Jim Gilbert has taught at Central for 23 years and teaches Cyber Engineering. Coach Shawn Canaday has taught Information technology for 28 years in Kentucky and Illinois. Administrator Chris Brown has been at Central for 14 years and teaches programming and material processing.

3.4 Engineering Advisor

In addition to the team mentors, we have an engineering student from the University of Louisville Speed School of Engineering: Morgan Folden. She is assisting with our robot concept and design.

3.5 Student Demographics

We have 37 students on our FIRST and VEX robotics teams, 15 girls and 22 boys. The team make up is 17 seniors, 15 juniors, 5 sophomores.

3.6 Team Sponsors

The University of Louisville Speed School of Engineering is our primary sponsor. They have supported Central's robotics programs for seven years. Frank and Joann Luecke gave us an incredible gift in 2020 that will fund the Centrons well into our future. We also attained grants from Toyota and C&I Engineering before the pandemic that we are able to use this season.

3.7 Team Growth

Despite a dip in membership last year, we are rebuilding our student base. We are approximately 84 percent of our pre-pandemic level.

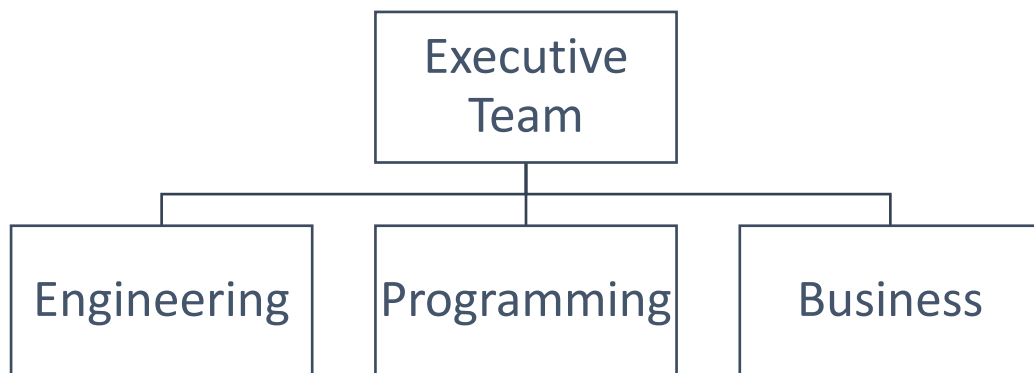
3.8 Collaboration with Other FIRST Teams

Team 5492, Winner's Circle Robo Jockeys from Manual High School, continues to be our mentor partner. They are always a fantastic source of advice and technical answers. They also allowed us to use their practice facility to test our final build.

4. Structure and Organization

4.1 Sub-Teams

Our team is divided into four groups based upon student strengths. Sub teams of engineering, programming, and business will focus on specific aspects of the project. Final decisions and guidance will be made by the executive team.



4.2 Executive Team

This team is composed of three seniors, all of which belong to Central's Innovation Magnet Program. Each student has a background in either FIRST or VEX robotics, and all are on an educational track to enroll in a college of engineering. They are also heading up our school's STLP team. One of their primary responsibilities is making sure that team members are following safety protocols.



4.3 Engineering Team

The engineering team will be responsible for planning, building, and testing the competition robot. This year we are using a study hall period to devote time to design and construction. The engineering team will also form the Pit Crew during competitions.

Engineering Team

Design

Chassis
Fabrication

Arms
and
Grippers

Electronics

Testing

Pit
Crew



4.4 Programming Team

The Programming Team will develop the coding and controllers for the robot. We plan on creating programs in both C++ and LabVIEW this year. Each program will be tested for efficiency, and one will be chosen for competitions. The Programming Team will also be responsible for analyzing the game rules and acting as the Driving Team during competitions.

Programming Team

Coding

Controllers

Game
Rules

Field
Analysis

Driving
Team



4.5 Business Team

The Business Team will be critical to the success of the Centrons. Their primary role will be following our financing plan for the season and finding additional funding sources. They will accomplish this by soliciting sponsors and planning fundraising. They will also be responsible for purchasing, social media, public relations, community outreach, and tournament relations. They will work closely with Central High School’s Sports Marketing Magnet program to develop an advertising plan.

Business Team

Financial
Planning

Purchasing

Sponsor
Relations

Social
Media

Public
Relations and
Outreach

Tournament
Relations



4.6 Safety

Safety is a critical aspect of our team’s ethos. This year we are installing a position of safety director to our executive team. This individual will be responsible for creating a mobile safety station that can be attached to our pit area during tournaments. All members will be required to know all safety requirements. Eye protection must be worn by any member working with the robot. Our makerspace is equipped with an industrial first aid kit, and the mentor/teachers have been trained by the school district to respond to hazards.

4.7 Schedule

We have designated three seasons for our team. In the pre-season phase we have been recruiting members, registering our team, and formulating this business plan. Our mentors have donated funds to purchase a third roboRIO, and we will use that processor to create test beds for exploring motor controllers and the pneumatics system. We have been meeting during a study hall period to build a practice robot that allows our Engineering and Programming teams to hone their skills. The official build season started in January with the delivery of the Kit of Parts. During our competition phase we plan to attend the Smoky Mountain regional in March.

September - December	Regular Team Meeting (during study hall)	11:50AM-2:20PM
January 8	FIRST Kickoff (online)	9:00AM-2:00PM
January 10 - 14	Design Sessions	11:50AM-2:20PM
January – February	Build Sessions	11:50AM-2:20PM
March 7 – 25	Practice Sessions	11:50AM-2:20PM
March 23	Robot Unveiling	6:00PM
March 30 – April 2	Smoky Mountain Regional	

5. Outreach

5.1 Summer/Fall Outreach

COVID restrictions kept our group from doing any sort of community outreach during the first half of the year. We had district restrictions on social distancing and travel.

5.2 Spring Outreach

On January 22, 2022, we were scheduled to host twenty VEX Robotics teams from around the Commonwealth of Kentucky for our annual Yellow Jacket Challenge tournament. This was to be the fifth robotics tournament we have held at Central. Unfortunately, we had to cancel the event due to the high COVID levels affecting our school district. We had spent approximately 150 hours preparing for the event.

Our district has graciously purchased a Boston Dynamics Spot robot for our magnet program. Upon receipt, we will visit various schools and conferences to perform robot demonstrations. (ADD)

6. Marketing

6.1 Collaboration with Sports Marketing Magnet

We are fortunate that one of the magnet programs at Central is Sport Marketing. As we have in the past, we will work with this class to refine our marketing plan. They can assist us with advertising, video editing, and graphic arts. Their expertise will be critical in allowing us to spread the word about the Centrons.

6.2 Sponsors

One of the biggest functions of our marketing team will be to solicit grants from local sponsors. This year we will focus on strengthening the signature partnership we have with the University of Louisville Speed School of Engineering. Our students will visit the college to “pitch” their plans for the year. Each sponsor will be printed in our advertising, featured on the side of our robot, and listed on our pit banner during tournaments.

6.3 Social Media

The marketing team will be responsible for keeping a team presence in social media. We have a Twitter account which is telling the story of our multiple endeavors (@CHSCentrons). We also have a dedicated Instagram account and YouTube channel.

6.4 Promotional Items

We are proposing spending \$500 on promotional items such as buttons, stickers, and logo cards to use at the tournaments while recruiting partners. We can also use these items for visitors to our maker space and during our outreach programs.

7. Proposed Budget

7.1 Projected Funding Sources: \$17,656.37

Carryover Balance (2020)	72%	\$12,656.37
FRC 2020 Voucher (Covid-19)	6%	\$1,000.00
Sponsor Grant	8%	\$1,500.00
UofL Sponsorship	11%	\$2,000.00
VEX Tournament Fees	3%	\$500.00

7.2 Estimated Expenses: \$11,000.00

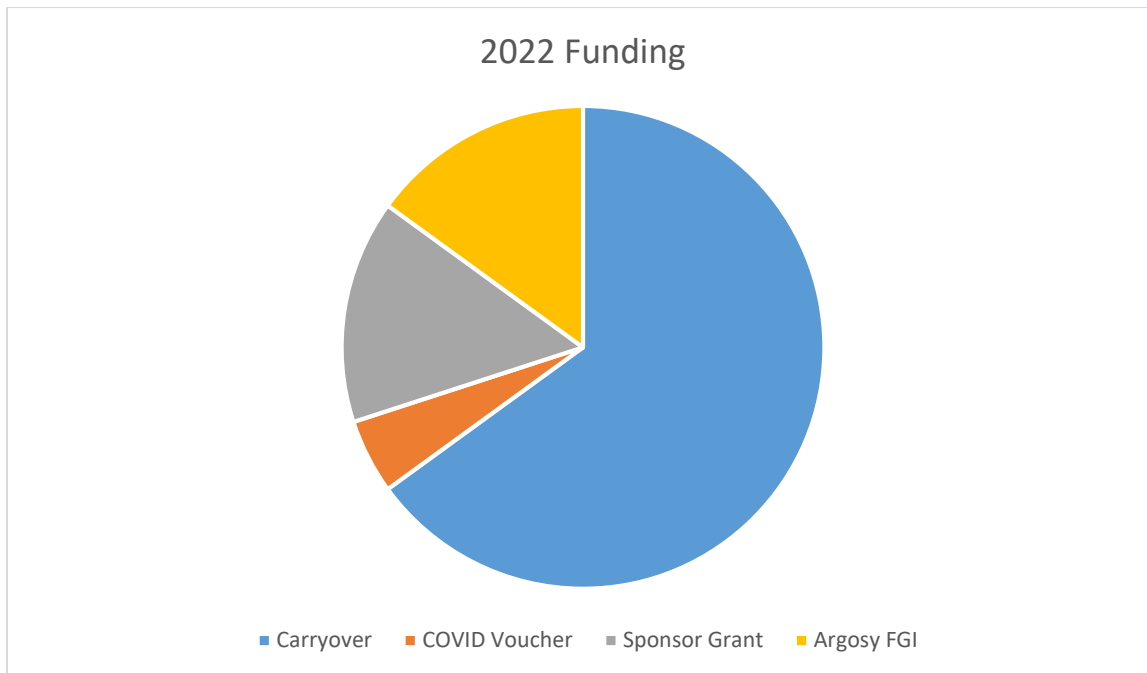
FIRST Registration	45%	\$5,000.00
Robot Parts	27%	\$3,000.00
Travel Expenses	23%	\$2,500.00
Marketing	5%	\$500.00

7.3 Notes

We were very fortunate to have received a number of donations driving up our carryover balance. At the beginning of the year we also received a wonderful COVID voucher from FIRST to help boost our team. Since we did not have any travel expenses in the prior two years, we were able to save much of our funding for this season.

7.4 Actual Funding Sources: \$19,656.37

Carryover Balance (2020)	65%	\$12,656.37
FRC 2020 Voucher (Covid-19)	5%	\$1,000.00
Sponsor Grant	15%	\$3,000.00
Argosy FGI	15%	\$3,000.00



7.5 Notes

Our sponsors were able to give us \$3,000.00. The University of Louisville gave a very healthy grant, but it was not applied to FIRST for this year. Instead, we were able to use that money for another aspect of our magnet program. Argosy gave us a wonderful FGI grant after our registration was paid, so we will have that in our FIRST account for next season.

7.6 Actual Expenditures: \$11,360.00

FIRST Registration	44%	\$5,000.00
Additional Parts	9%	\$1,040.66
Travel Expenses	43%	\$4,889.34
Marketing	4%	\$430.00

Ending Balance: \$8,296.37

(School Account \$5,296.37 + FIRST Account \$3,000.00)



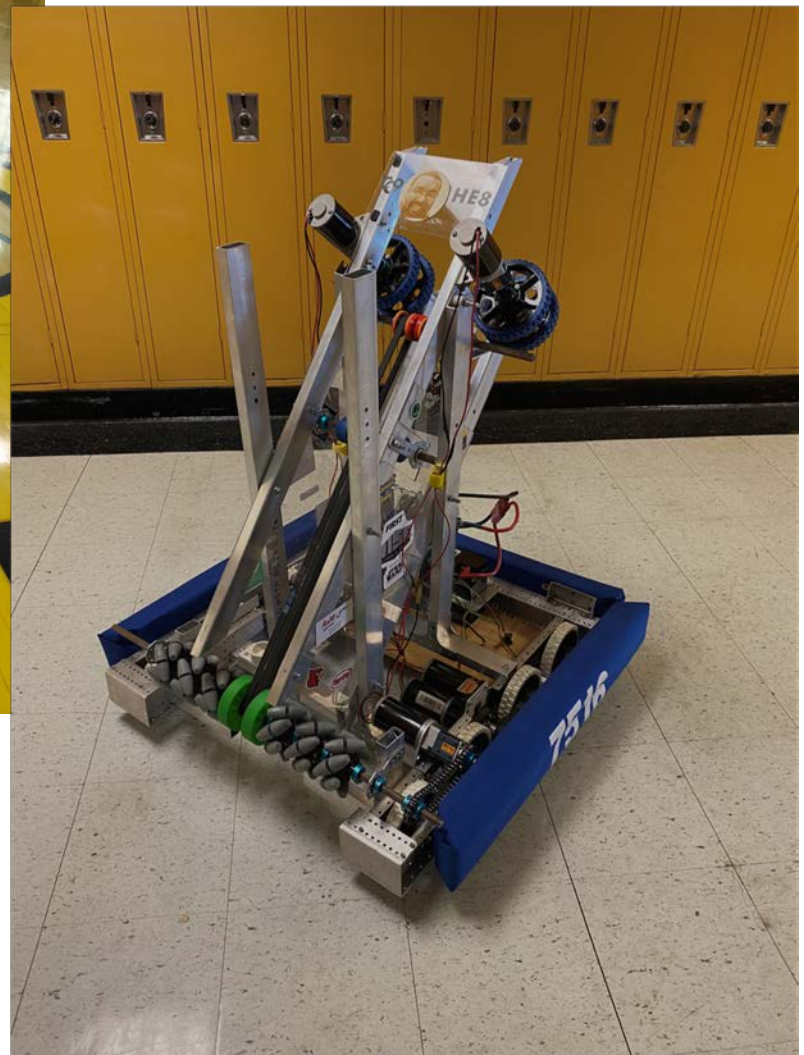
7.7 Notes

We spent considerably more on travel than prior seasons this year. Our school board required that we had to limit our students to two per hotel room due to COVID protocols. Gas prices also contributed to the higher expense. We were able to save money on parts since we have been building up an inventory of elements. We were also able to re-use parts from our older robots.

8. Photos



2019 robot - *Diane Porter*



2021 robot - *C9HE8*



2022 robot – Ty Scroggins

8. Sponsors

8.1 Major Donors

We are grateful and indebted to our sponsors. The cost of this program would be overwhelming for our classroom budgets, but there are people who believe in the students of Central High School, and the donations we receive allow us to create life-changing experiences.



F. J. Foundation Inc.



8.2 Gifts in Kind

Argo Networks
A & M Machine Company LLC

9. Robot Dedication

Central High School was faced with a number of changes and challenges during the COVID pandemic, but we were hit especially hard with the loss of three members of our beloved faculty. Our long-time counselor, Ms. Julie Brown, and one of our assistant principals, Ms. Shawn Edwards, both lost courageous battles with unexpected diseases. We have named two of our VEX robots in honor of these wonderful ladies. We also lost Ty Scroggins, a social studies teacher who formerly coached our school's football team.

Tyrann "Ty" Scroggins Scroggins was a 1990 graduate of Fairdale High School, where he played football and basketball. He went on to play linebacker at the University of Louisville. He became Central's head football coach in 2007 after coaching at Doss High School for nine years. Under his leadership, our football team became a powerhouse. In the next six years he we won five state titles, making him the first African American coach to win a state football championship in Kentucky. He retired as coach of Central in 2016 but stayed as a faculty member. His ten year record was a remarkable 101-43.

During his tenure at Central, he was a tremendous role model who mentored countless students. His leadership was apparent throughout the district and the state. He helped to form the Kentucky Minority Coaches Association to help new coaches. Our football stadium was named after him in 2021, and he is to be inducted in the Kentucky High School Athletic Association's hall of fame in May of 2022.

Coach Scroggins died on February 10, 2021 after being hospitalized with COVID. We have dedicated this year's FIRST build to his memory.