

MILLIE'S GUIDE TO STARTING A FRC TEAM

-conceived by SWAT771-





GLOSSARY

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TIPS AND TRICKS



Starting a FIRST team can be a rather daunting task. There is no doubt that common worries about the needed components of a successful team can be overwhelming. Nonetheless, with passion, hard work, and a few helpful tips and tricks, dreams of starting a FIRST team can become a reality. For instance, take it from some of the creators of SWAT 771, who were helpful in sharing some of the lessons they learned and the challenges they faced when starting and running this team

St. Mildred's Lightbourn School did not always have a robotics team. In fact, it all began in 2000, when Ms. D. Byers, an English teacher at SMLS, was approached by two students with the idea of starting a FIRST Robotics team. The school was incredibly supportive of this proposal, and in 2001, SWAT 771 made history by becoming the first all-female team in Canada. Since then, SWAT 771 continues to grow as a team, increasing its impact on the STEM community and beyond. There is also no doubt that SWAT isn't the only robotics team that has been incepted by students, as there are numerous impactful FIRST teams who may share a similar story. This leads us to the first few helpful tips for those in a school community looking to start a FIRST team:

TIPS AND TRICKS

Tip #1

If you are a student who is passionate about robotics and wants to form a FIRST team, it is helpful to ask a teacher or another trusted adult at the school to help you get started. Working with a staff member at the school can be beneficial when making certain decisions, and they are very helpful and supportive figures if you are faced with a challenge. As long as you are enthusiastic and dedicated to supporting the team, many teachers would be eager to help you start the team as well as with other logistics regarding the team.

Tip #2

If you are a teacher or other staff member who is enthusiastic about starting a FIRST team at your school, it can help to begin by getting a few students on board first. With student participation, it would become easier to gain support from the administration, attract more members, and help promote the sustainability of the team.



TIPS AND TRICKS

Challenges

Forming a FIRST team can be more difficult than it may seem. For instance, after completing some of the preliminary steps in starting the team - such as gaining support from teachers, students, and administration - there could be some unexpected challenges along the way. Being aware of these challenges beforehand and being able to successfully prepare for them is crucial to a smooth start for the new team. Based on SWAT's early experience, there are some challenges that may need to be considered:



TIPS AND TRICKS



Challenge #1

Finding a space where your team can meet and build the robot can be difficult. If the team is school-based, it would be ideal to find a classroom to use during the meetings. This may be difficult, as the location would need to be available during a specific time period, and accommodate any equipment or materials that would be used. If you are unable to find a suitable space within the school, a garage would be another option and may be ideal for community-based teams.

Challenge #2

The challenge of money to pay for equipment and other materials can be solved by fundraising. In this situation, it may be helpful to begin fundraising. Rather than raising money, however, it would be helpful to ask for items such as tools, computers, safety glasses, and anything else that the team needs. The team can also reach out to sponsors for donations or equipment, such as a parent association or tech company.



TIPS AND TRICKS

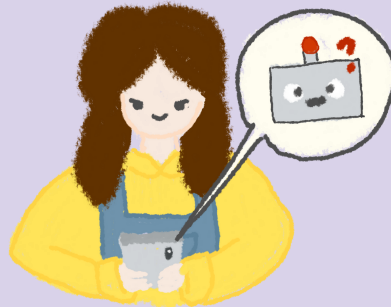
Challenge #3

Another potential challenge is recruiting students to become members of the team. To increase interest and participation, a video or presentation can be displayed at an assembly to increase the students' enthusiasm to join. Team members can also reach out to interested teachers or friends to support the team, as well as the Professional Engineer association for potential mentors.

Social media platforms, such as LinkedIn can be especially useful when recruiting participants and mentors.

What could have been done differently?

Despite SWAT's success and progression over the years, there are many things that its creators would have done differently. Learning from these reflections can be very helpful to consider when starting your own FIRST team.



TIPS AND TRICKS

Lesson #1

It is important to realize that the team will run in cycles as students graduate. Therefore, it is important to train new members and establish a sustainable leadership system to ensure the continued success of the team.

Lesson #2

When building a robot, it is easy to become caught up in all the details and new ideas coming in. It is important to focus on key tasks for your robot, rather than trying to do everything. A high-quality robot with fewer features will be more successful than a lower-quality robot with many features.

Lesson #3

Creating yearly, monthly, and weekly schedules will help the team stay on task, and ensure that there is enough time to be spent on each component of the competitions.

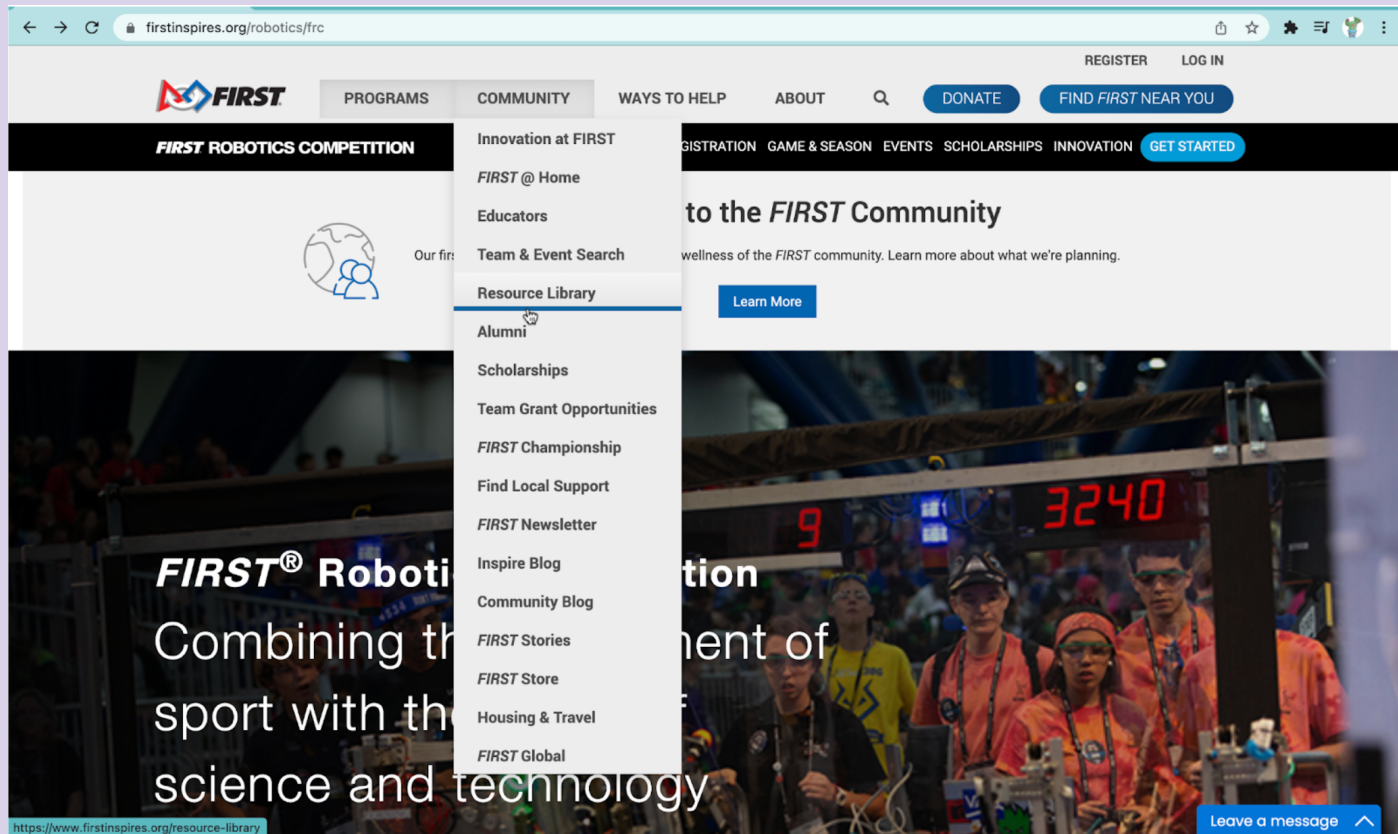


TIPS AND TRICKS

Overall, other than the technical tips, challenges, and lessons, here are some final things to remember when starting a FIRST team. Firstly, keep in mind that FIRST is a supportive community, so don't be afraid to reach out for help. After all, coopertition is a core value of this community. Most importantly, the main thing to remember is to have fun with your team and enjoy your time being involved in robotics. The friends you will make within FIRST are often friendships that last a lifetime, and you will continue to connect with them over the years both in and out of FIRST competitions and events.

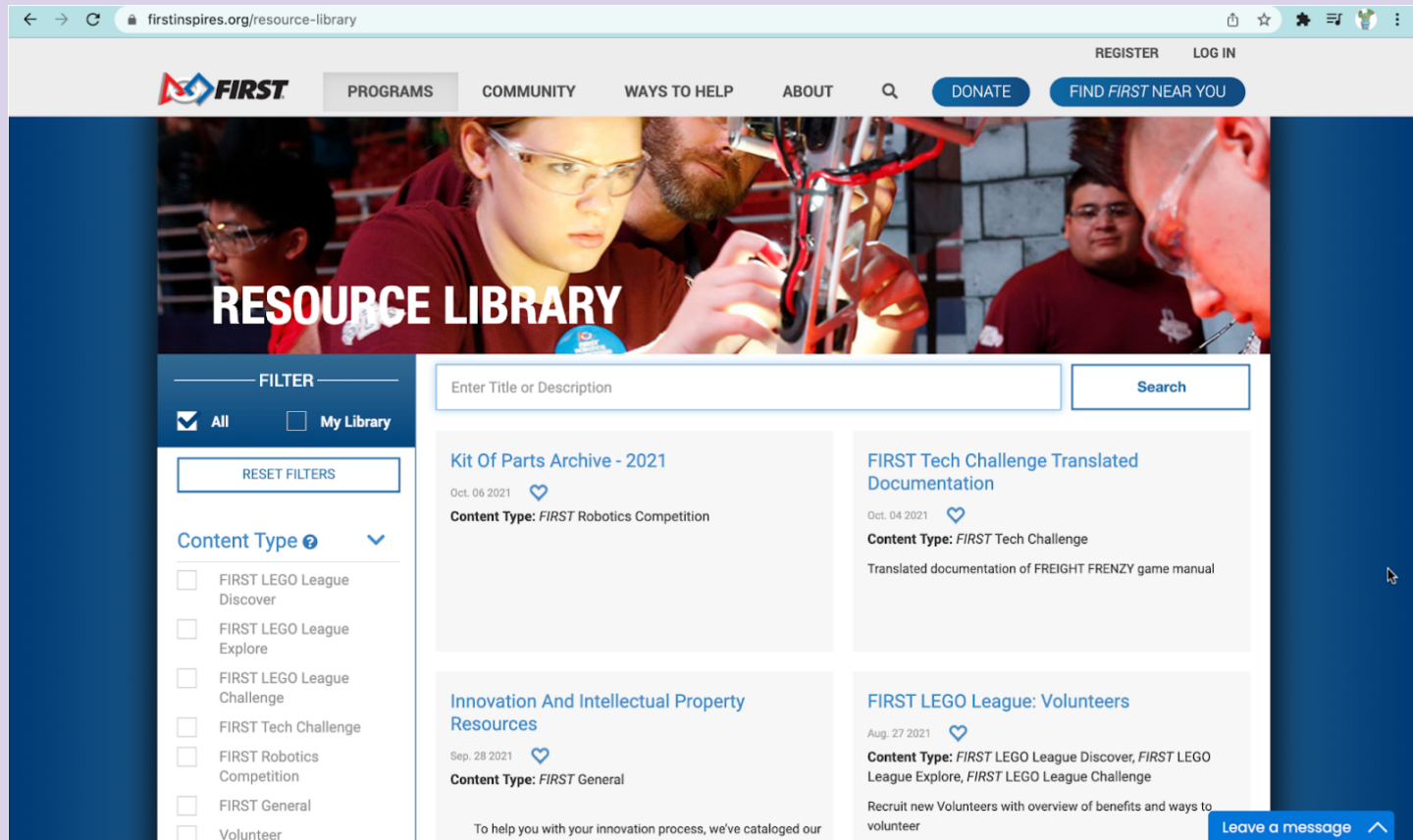


FIRST RESOURCES



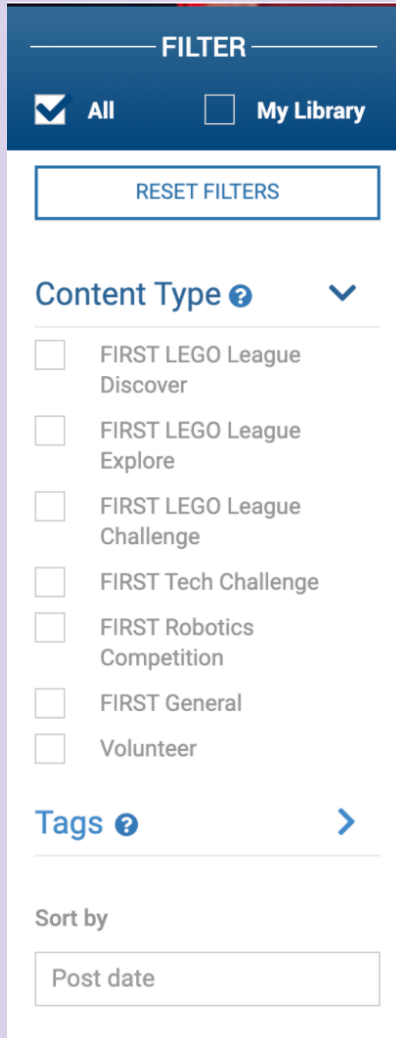
Go to <https://www.firstinspires.org/robotics/frc> and click on the Community tab, where you can find 'Resource Library'. Click on Resource Library to find many different resources.

FIRST RESOURCES



This is the resource library where you can find documents from past and present years when needed.

FIRST RESOURCES



A screenshot of the 'FILTER' sidebar on the FIRST Resources website. The sidebar has a dark blue header with the word 'FILTER' in white. Below the header, there are two radio buttons: 'All' (selected) and 'My Library'. A 'RESET FILTERS' button is located below the radio buttons. The 'Content Type' section is expanded, showing a list of categories with checkboxes: 'FIRST LEGO League Discover', 'FIRST LEGO League Explore', 'FIRST LEGO League Challenge', 'FIRST Tech Challenge', 'FIRST Robotics Competition', 'FIRST General', and 'Volunteer'. Below the 'Content Type' section is a 'Tags' section with a right-pointing arrow. At the bottom of the sidebar is a 'Sort by' section with a dropdown menu currently set to 'Post date'.

FILTER

☒ All ☐ My Library

RESET FILTERS

Content Type ? ▼

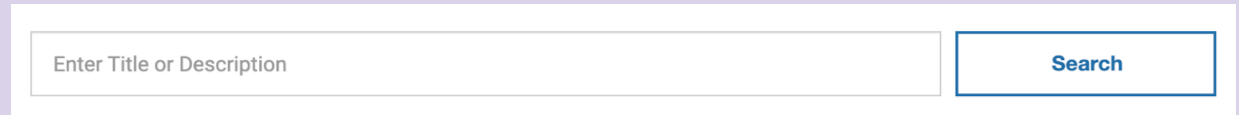
- ☐ FIRST LEGO League Discover
- ☐ FIRST LEGO League Explore
- ☐ FIRST LEGO League Challenge
- ☐ FIRST Tech Challenge
- ☐ FIRST Robotics Competition
- ☐ FIRST General
- ☐ Volunteer

Tags ? ➤

Sort by

Post date

This filter can be used to find specific pieces of information or resources. It can be seen on the left side of the page.



A screenshot of the search bar on the FIRST Resources website. It consists of a white input field with the placeholder text 'Enter Title or Description' and a blue 'Search' button to its right.

Enter Title or Description

Search

The search bar can be used to find a specific resource. It is situated above the resources.

For Canadian teams here is another useful link:
<https://www.firstroboticscanada.org/#>

SUSTAINABILITY & LEADERSHIP

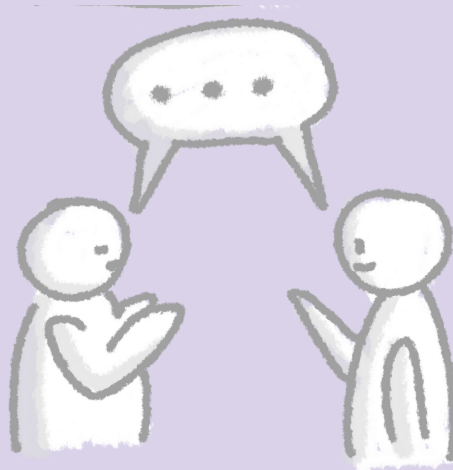
One of the most crucial components to consider when starting a FIRST team is how it's going to be run. There are many different leadership systems that work and it really comes down to what is the most efficient and productive for your team. It's also important to consider how to run your team sustainably.

SWAT's leadership system for the 2021-2022 season comprises of the following: 2 co-captains (1 in Grade 11 and 1 in Grade 12), 2 Mechanical and Design Advisors (in Grade 12), 2 Mechanical and Design Leads (in Grade 11), 2 Electrical Leads (in Grade 11), 2 Programming Leads (1 in Grade 12 and 1 in Grade 11), 1 Strategy, Scouting and Safety Lead (in Grade 11), 1 Awards Lead (in Grade 11), and 1 Business Lead (in Grade 12), and 2 SWATposium leads (1 in Grade 10 and 1 in Grade 11).



SUSTAINABILITY & LEADERSHIP

We have at least one lead for each subteam on our team, and leads are responsible for running their individual subteam during pre-season and build season meetings. We also encourage a lot of communication between the leads. It's important to have your leads communicate because building a robot takes a substantial amount of collaboration within the entire team. With each lead taking on that responsibility for advocating for their sub-team's needs, we can make sure that each subteam can accommodate others in the best interest of the team. The captains also aid in this process, by organizing full team and lead meetings, and by checking in with each subteam to make sure everything is going smoothly.



SUSTAINABILITY & LEADERSHIP

Different leadership systems work well for different teams. Even though SWAT operates under this system, another may suit your team better. Your team may choose to have more leads, fewer leads, or none at all. For example, maybe your team doesn't have formal leadership positions, but instead, older members take the initiative to teach younger members about their own knowledge and experience. It's important to note that this article is written from SWAT's own personal experience, and for us, this has been what has worked the best. You can choose to experiment with different leadership systems and find out which one works best for you.

Another important aspect to consider is sustainability. What does sustainability mean? Running your team sustainably means that your team is able to have a leadership system that can operate when the current leadership changes. This is important as it means that your team can thrive throughout the years, as people graduate and move on, and new members join the team. For example, for some leadership positions, we have someone in Grade 12 and someone in Grade 11. The Grade 12 can mentor the Grade 11 so that when they graduate, the team has someone who has experience in that leadership role to take over.

SUSTAINABILITY & LEADERSHIP

It's essential to start passing down knowledge early to promote sustainability. The first-year members that join SWAT are responsible for building game pieces for that season. This allows them to have experience and training in using power tools and building. Starting their second year, they become more involved in their subteam(s). This allows older members to train younger members, and start a cycle of sustainability for the team.

It's also important to spread the leadership out, so it's not just one person occupying all the roles. This is bad for sustainability, as once that person moves on from the team, no one else has experience with those roles. SWAT has also experimented with Junior Lead positions, where they would shadow and be trained by the Lead. Even though this is something that SWAT no longer implements, it could be something your team might find works for you.



SUSTAINABILITY & LEADERSHIP

The big take-away from this is: Find something that works for your own team's needs. This article talked a lot about SWAT's own experience, but the cardinal rule of thumb is that every team has different needs and something different may work for them! Experiment with different leadership styles and systems as much as you can, and when you find something that works for your team, stick with it!



TRAINING/INDUSTRY MENTORS

Who are they?

Training/industry mentors are individuals from various industries that bring valuable insight and knowledge to the team.

Why is it important to have them?

FIRST robotics teams consist of enthusiastic and dedicated high school students, having experienced and knowledgeable mentors positively benefits the team. Mentors not only help with building a robot, but they also teach important skills that can be applied outside of robotics. Industry mentors provide opportunities for students to learn more about STEM as well as inspire students to pursue alternative careers that they may not have known about. Mentors are important to help foster growth and innovation in students and help challenge and encourage students to keep improving.



TRAINING/INDUSTRY MENTORS

How can you get them?

FIRST is equipped with a network that allows mentors to find and connect with teams either virtually or in person. When looking for a mentor, it is highly recommended to look at this platform.

https://info.firstinspires.org/mentor-network?utm_source=first-inspires&utm_medium=mentors-coaches&utm_campaign=fir-mentor-network&hsCtaTracking=9d570bda-21f6-4bee-a624-a5df741be93c%7Ca5f7e894-cc1f-47cd-8f82-fcb1be37e9e7

Another way to find mentors is through industry sponsors. Sponsorships can be a great way to meet potential mentors that are willing to work with your team. Don't be afraid to reach out to people to see if it is something they would be interested in.

SPONSORSHIPS & LOGISTICS

Budget

Running a FIRST Robotics team and competing in competitions is costly, so it's important to devise a detailed budget plan prior to starting a team. First of all, there is a \$6500 CAD team registration fee for a Rookie FRC team to enter the competition. Please note that Rookie Teams can apply for a \$4000 USD grant. If you are not eligible for the Rookie FRC team or are from a different district, please refer to this website to find out how much you need to pay:

<https://www.firstinspires.org/robotics/frc/cost-and-registration>.

Next, you need to estimate the cost of building your robot, including parts, tools, equipment, and some spare parts. For SWAT, we set the budget for robot construction at \$10,000. If you are a team just starting out, be sure to hire a professional coach with specialized knowledge to assist the team. During build season, you may also consider spending money on build meals and snacks if your students or members need to stay after school to build robots.

SPONSORSHIPS & LOGISTICS

Often, it's important to have a team t-shirt or sweater to represent your team and get others to recognize your team. Therefore, you should dedicate some of your budget to designing and ordering team t-shirts. When you participate in the competition, you will be required to cover the costs for transportation and expenses during the competition, which include buses, hotel and food. Budgets may be affected by circumstances such as the Covid-19 pandemic, as events might be cancelled. If your team qualifies for the championship game, there will be a new budget.



SPONSORSHIPS & LOGISTICS

Below is the 2021-2022 SWAT budget for reference:

Robot+Extra	\$10,000
SWATposium	\$200/\$2000
Pre-Season Snacks	\$250
<i>FIRST</i> Registration	\$7500
Build Meals	\$450 per day (3 days per week for 8 weeks)= 10,800\$
T-shirts	\$1000
Transportation	\$1500 + \$2000
At Competition Costs	\$5000
Total	\$38550

SPONSORSHIPS & LOGISTICS

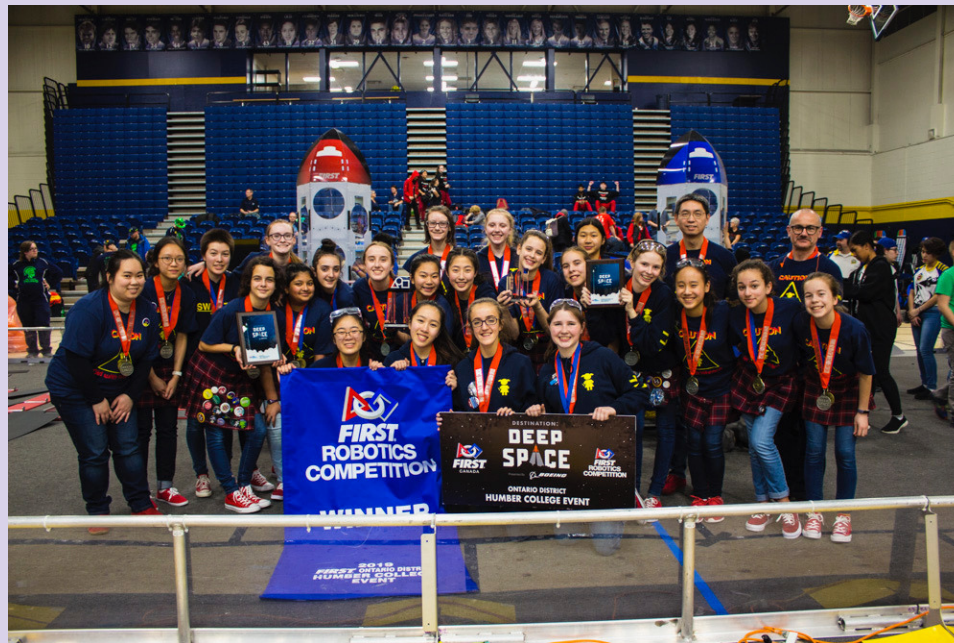
Common Sponsors

Running a team can be costly, so finding sponsorships is critical to success.

Sponsorship refers to support in all kinds of shapes, styles and sizes from sponsors. The sponsors that people usually look for are companies around the neighbourhood because there is less competition with other teams and the company knows you better. They can be wholesalers, food stores or even clothing stores. Food companies are able to provide meals and food for your team. You can also look for bigger companies like Nike or Walmart, as they are more likely to sponsor more money. However, your chances of getting them to sponsor will be lower since many other teams will also be competing for their sponsorship. You can start looking for sponsorships by brainstorming a list of companies and contacting them via email. In the email, you should emphasize who you are and your goals for getting sponsors. If a company agrees to sponsor you, make sure to maintain good communication with them and keep reaching out to more companies. Some common sponsors of SWAT are Longos, United Technologies Corp., Hatch, Panago Pizza and Whole Foods.

ABOUT SWAT

SWAT 771 is an all-girls robotics team from Oakville, Ontario, Canada. SWAT's goal is to inspire girls around the world to take part in science and robotics.



  @frc771

<https://swat771.com>