

Sainte Pulchérie French High School FIRST Robotics Competition (FRC) Team



FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY



2019 - 2020 FIRST MANUAL

INTRODUCTION

Mission Statement

Our foremost principle is not to improve solely within ourselves, but to bring people up with us while improving. We take any measure necessary like building science, engineering and technology to inspire innovation while nourishing crucial skills like curiosity, creativity, risk taking, openness, perseverance, leadership and self-confidence.

Team History

In 2015, SPARC was started in Sainte Pulcherie French High School. The team was formed in Istanbul, Turkey and in March 2015, the team made its debut at FIRST Robotics Competition Central Illinois Regional in USA. At the competition, 5665 managed to come away with Rookie Inspiration Award. In 2016 we earned a place in semifinals and won Entrepreneurship Award in Turkish Off Season. At the FIRST Championships in Orange County Regional three years ago, we got Dean's List Finalist Award (Alara Değirmenci) and Judges' Award. We have won Excellence in Engineering in Istanbul Regional 2018 and Entrepreneurship Award in New York City Regional 2018 where we also have been one of the quarterfinalists. In 2018 Turkish Off Season we managed to be one of the finalist, plus we earned Entrepreneurship Award. In 2019 Bosphorus Regional, we won the Gracious Professionalism Award and we managed to reach the semi-final.

Summary of Team Growth

Having started off solely with 18 students and 1 mentor in the same year, we have successfully expanded our team owing to the welcoming and accepting standpoint on science and technology here in Turkey. With this rather colossal progress, we have admitted students from all over our country and three years ago, we reached 55 students and 7 mentors. There has also been several times where we have had to contribute to our goal by spending our ever so loved pocket money. For Power Up Season we had 26 students and 1 mentor. For the Destination Deep Space season, we will be totally 42 students and 2 mentors. As a result, SPARC has claimed its well-deserved title of having the most number of students among all Turkish FRC teams. We also presented the FRC to them and helped them by all means to create and manage their own teams. As a consequence of the competitions being held in the US, just like any other foreign team, we too have had numerous amounts of problems concerning the transport, the accommodation, the fund and even all at the same time. However, we have learnt over time how to properly plan out our funds which, now and again, has been insufficient. As we presented FRC to other students last year, we want to improve our team structure. As there were a lot of students graduated last year, our team now consists of 20 females and 15 males.

Events and Awards:

2015 Central Illinois Regional

- Rookie Inspiration Award

2016 Turkish Off-Season

- 500\$ Grant
- Entrepreneurship Award
- Semi-Finals

2017 Orange Country Regional

- Judge's Award
- Dean's List Award

2018 Istanbul Regional

- Excellence in Engineering award

2018 New York City Regional

- Entrepreneurship Award
- Quarter Finals

2018 Turkish Off-Season

- Entrepreneurship Award
- Finals

2019 Bosphorus Regional

- Gracious Professionalism Award
- Semi Finals

FRC, FLL and FTC we have started:

- Team 7134 –
rOctopus
- Team 6989 –
KAISER
- Team 6416 – Mev
Makers
- Team 7140 – Oksef
Robotics
- Team 7552 –
PERSEUS
- Zapyon greek Highschool FRC
Team
- Çanakkale Bahçeşehir College
FRC Team
- Macedonia Nova International
School FRC Team
- Mev FLL
Team
- Leg Goth FLL
Team
- Sainte Pulcherie FLL
Team
- Istek Schools FLL
Team
- KAISER FLL
Team
- Zapyon Middleschool FLL
Team
- Team 14350 - SPARC
FTC
- Team 14378 - KAISER FTC

PROJECTS FOR PEOPLE WITH DISABILITIES: Many people with a disability don't have the same access to places and services as others because their needs in fields such as mobility and communication have not been met. Thus as team 5665 SPARC, we made various projects for disabled people to make their life easier and more comfortable.

1) **Optical acoustic glasses**

In this project; we introduce an “optical-acoustic glasses” we designed to ease the life of visually impaired individuals whenever they would be independent in a location. It has been designed for the hearing impaired to wear it in any environment without any aesthetical worry. Thanks to its optical-acoustic properties, the glass warns the owner about the direction and intensity of surrounding sounds such as voices and warning signals. Hereby the individual can determine the source and intensity of a sound and turn to whoever is addressing to him. With the use of the “optical-acoustic glasses” it was intended to ease the hearing impaired person's communication and grant him awareness of the difficulties he might encounter in internal and external environment.

2) **SmartLab**

To further help disabled people in wheelchairs, we are continuing to plan a robotic workshop where they can work easily. We designed more accessible shelves and tables. We are also thinking of further developing this project by adding mobile shelves in the future. We think that disabilities should not get in the way, in terms of access to robotics competitions.

3) **Smart Wheelchair**

Physically impaired people have been struggling with regular wheelchairs for a long time now. Therefore, we are currently designing this smart wheelchair with mecanum wheels and wider ability of mobility.

4) **Chairman's award video**

For people who are hearing impaired we added sign language translations to our chairman's award video

5) **Safety Manuals**

We translated our safety manuals to Braille and printed them so that our visually impaired visitors could read them too.

STEM Educations:

As team 5665, we made a big progress in our school via changing community project's curriculum. Before us, community impact projects were continuing with a stable program. However, we decided to add STEM subjects to each of them. Now, all of our community impact projects have technology subjects for different groups of age. We have made 3 STEM Centre projects; Çankırı STEM, Balıkesir STEM and Payas STEM. We have worked with children with leukaemia in Çankırı STEM center. In all of the STEM Centers we taught MindStorm coding and making FLL robots, plus we gave basic Arduino training and Fisher Robo4cs training. We have been giving conferences about maker movement in İzmit Atafen School, Ankara Sınav College, Muğla YÖNELT College and Aydın Municipality. We have built robotics laboratory for 2 public schools in Kocaeli. For future, we are planning to build a robotics laboratory for physical disabled individuals.

STEM PROJECTS	THE EDUCATIONS AND DONATIONS	NUMBER OF STUDENTS
Çankırı STEM Center	<ul style="list-style-type: none">• 8 Mindstorm kits• 8 VEX kits• 30 Arduino kits	750 students per month
Payas STEM Center	<ul style="list-style-type: none">• 20 VEX IQ kits• 60 VEX kits	1250 students per season (a season is 3 months)
Hatay (Bahçeşehir Schools)	<ul style="list-style-type: none">• FRC education	60 students
İzmir (Denge Schools)	<ul style="list-style-type: none">• VEX and VEX IQ education	15 students
Gaziantep (DEVA Schools)	<ul style="list-style-type: none">• VEX education	50 students
Balıkesir STEM Center	<ul style="list-style-type: none">• building STEM Center• 8 Mindstorm kits• 12 VEX IQ kits	33 students
Trabzon	<ul style="list-style-type: none">• Mindstorm education• VEX education• FRC education	42 students
İzmit (Atafen School)	<ul style="list-style-type: none">• FRC education	40 students

SPMakers:

SPMakers is a fair where creativity, craftsmanship and inventions are celebrated. It is aimed for everyone who loves technology, is devoted to teach others or loves to create things. It is where every maker shares and learns from others, regardless of their age or skills. As SPARC, we organized this event and share our previous experiences to more than 1500 students.

As we tried to introduce FRC to our friends, we also learned a lot from them. With SP Makers and other schools, we gave many different workshops to students who would like to learn more about Arduino, FLL, VEX, Fisher Robotics and much more. We tried to provide hand-on experiences for our friends as much as we can.

SCODE:

We created an application called “SCODE” for little kids especially for the ones that participate FLL or Jr.FLL. It’s a simple app which provides learning simple coding to kids by having fun. The application has various spectrums of topics as space, animals, clothing and such. It has over 50.000 downloads in Google Play.

➤ **Robotex Competition:** We helped our team rookies to participate the Robotex Competition in Antalya to help them gain more experience with robotics before FRC. We had really good feedbacks from them and got really successful in the competition by winning Judges Award and getting the 4th place. We gained the chance to the competition in Shanghai.

Team Facts:

- Approximately 200 accounts view every single one of our Instagram posts.
- We have started a YouTube channel to inspire and take the attention of young generation by talking about news in STEM fields, gaming and science fiction movies.

- We have reached approximately 1 million people with local, national and private newspapers.
- We have reached minimum 4500 people by our community involvement projects.
- Our fundraising team introduced FIRST and SPARC to major companies and start-ups; including Ford, Vestel and ABB.

SPARC in Media:

SPARC has always been active on social media since the day it was founded. We are posting regularly on Facebook, Instagram and Twitter. Our aim was always to propagate FRC and robotics technology. We added Turkish dubbing to FRC 2017 SteamWorks video to make them easier to understand. We tried to gain awareness of FRC, robotics and our team by giving interviews from each school to Shalom Newspaper. We tried to improve ourselves by attending different conferences and panels. We tried to help other teams as much as we could at the Off Season and we always made safety our top priority. We want to thank everyone who supports and follows us on social media. Additionally we made interviews with one of the famous radio programs called "Geveze". More than 10 famous newspapers wrote about us.

Goals:

Safety FIRST:

Our team members passed the “Work Safety” test of the Turkish Chamber of Mechanical Engineers and were awarded personal certificates. We care about safety in and outside our team and know our health is the highest priority. According to that we distribute safety kits in every event and try to entertain people by our safety game so that they will give their attention to this subject.

Mentoring other teams:

We have been mentoring more than 10 different FRC and FLL teams that we established or introduced. In addition to these team, we are always opened of any team’s questions or friendship. We always get in touch with the teams via Instagram, Facebook or e-mail. It doesn’t matter if we know that team or not. FRC’s basis is formed absolute friendship and joy! We want to follow its path.

Hi, I’m Cihan Akbaba, mentor of Mev Makers team (6416). My story of acquaintance with FRC was too fast to be a story. One night Mehmet Özdemir (mentor of the team SPARC) called, whom I contact frequently, and started to talk about the excitement in the tournament and the stages of making the robot. “Actually it is much more than the robot,” he said “why don’t you join?” hereupon I started to search FRC. It was the last day to

register. I told FRC to my students, they were as enthusiastic as I was. With help of Ayşe Hanım we met FRC at the end. Only Mehmet Özdemir is responsible from all of the colds, flu, coming back home at 4 a.m., and the problems I went through because of the late comings within the process. Still thank you for spreading this “virus” to me. -Cihan Akbaba, Mev Makers (6416) mentor

1
7

SPARC suggested starting this club, referring to FRC. It supported us by introducing the teachers, who set up this club in their schools and ensuring that we obtained all of the information we need. We contacted Fikret Yüksel Foundation from his backup. The club, which we were thinking to establish, has started this year and our students built their robot for the competition in 19-21 November. We really appreciate all of his support during the process. -Hüsnü Yılmaz

CHARITY PROJECTS

INNOVATIVE VILLAGE IN AFRICA:

We are initiating a project which involves the renovation a village in Africa, Tanzania.

Collaborating with Idea Universal Foundation we will build watering systems by wells and canals for making agriculture easier for the African village. Since finding electricity in Africa is rather hard we decided to donate them solar batteries for restorable and cheap energy. We will open schools to help them learning innovate farming.

We're collecting money in 2 months; we have been able to gather 1500 dollars. For fundraising this project we by selling cakes, organising a lottery in Christmas and preparing a food sale in our school and we will run a concert event and planning to hold conferences with scientist and engineers and use the help of media to spread this project, and organise a TEDx conference with the founder of this foundation; Hayri Dađlı.

Libraries for Underprivileged Schools:

Every year in our National Republic's day, we help a school that doesn't get hands on any books and doesn't have any library is chosen among all Turkish schools as the sister school. Then, all the students compile all the books for the sister school. Once the boxed spare books are ready to go, a tutor and a number of students go to the chosen sister school and build a library.

I Have a Daughter in Anatolia:

Every year, 24 November is celebrated as the Teachers' Day in Turkey. And collaborating with our high school, we have a very special and meaningful way to celebrate this day.

Us being students, we think that the best present we can give for our teachers is helping girls in Anatolia by granting their education. So, for this purpose, we have started the "Anadolu'da Bir Kızım Var" (I Have a Daughter in Anatolia) project to support two girls' education in Anatolia every year by collecting donations and it has been two years since we have started this project.

Sponsorship:

As a team who represents a small company, by having every individual work on the subject they are more interested in, we are continuously in contact with other companies. Simulating and learning about advanced and knowledgeable corporations, allow us to understand the work life that is waiting for us in the future.

Throughout this process, these companies have been generous enough to support us financially, whether this is for our long travel to the US or for the community service that we do all around Turkey. They try to support us as much as possible in order to spread the robotics spirit all around the country. With such support, we do not only teach everyone- from young to old- the developed technology, but we also use these donations to help newly developed teams by having them in our team sessions and teaching how the competition works so that they can be future teams of the First Robotics Competition. As a team fact: “Our fundraising team introduced FIRST and SPARC spirit to more than 50 major companies and startups.”

TEAM ESSAY

“Space the final frontier, these are the voyages of the starship Enterprise.” is phrase everyone who watched Star Trek knows. What was viewed as impossible back then is now considered our reality. And this is what we are trying to accomplish here. Doing the impossible.

We are 5665 SPARC. We are a space enterprise who has dedicated itself to reach a place where everything is possible, where the limit is the outer-space. We are a team which consist of 26 girls and 22 boys who won't back out from working till we achieve things that are perceived as impossible and we will walk you through the process in which our rockets are launched.

Stacking:

First off, the upcoming rockets that we've been stacking the pieces for, are the teams we are planning to establish and our Youtube channel. On our Youtube channel, we plan on posting videos, as well as podcasts, to share news and updates related to STEM in a lively and comprehensive way. We view this as a great opportunity to extend the limits of spreading FIRST as we think that rather than English; teaching it in

Turkish, our mother tongue, would be way more helpful to our viewers since it has never been done before. There are two sides of a coin, one is spreading STEM by informing the general audience and the other side is spreading FIRST by starting new teams. The new rockets we are currently stacking the parts of are 3 FLL teams and one FRC team in France. We launched many rockets before and we don't plan on stopping anytime soon to stack up new materials for our rockets to successfully reach the outer-space, where ideas come true.

Moving to the Crawlerway:

Besides the newer rockets just getting put together; another rocket is currently on its way to the launchpad to get fueled. Our destination is Africa. The mission of this rocket that we're still working on the funding of is simply building a smart village in Tanzania, Africa. This collaboration with the Idea Universal Foundation is being executed in four steps. Building smart water canals in order to solve the water problem, establishing a seed bank as a solution for farming, using solar batteries to bring in electricity and last but not least, enhancing the education of the children with the help of tablets. This all sounds great, but we wanted to make it even better by including something that was actually made by us, so we designed smaller water pumps that are way more portable than normal sized water pumps which could also be used for smaller water wells. They also use solar energy. So for smaller villages which don't have proper access to electricity it is both an environmental friendly gadget and an easier solution for the villagers. Of course this was not easy to accomplish as we had many struggles financing this huge project. We collected money day by day by selling homemade cakes, pastry and hosting a concert. We do all of this for the sake of the children and young adults in Africa where a lot of kids die because of the polluted water that is being used. Our goal is to fulfill their basic human needs, which is the least we can do.

Fueling:

As we get closer and closer to the launch we complete the stage where we have done many of the steps and slowly start preparing our rockets to launch. One of the main rockets we are fueling as of now are STEM trainings we gave in Hatay, Izmir, Gaziantep, Balıkesir, Izmit and STEM centers we opened in Payas and Çankırı. Ever since we've noticed that changing a country's conception of the world depends on changing the education system, we have been trying to do our best by spreading the message of FIRST. Turkey has a rote-learning based education system which has a bad impact on students. By aiming to change the system, our goal is to create a better one which can allow students to discover their potential on maths, science and logic-based activities and according to that we've trained more than 200 students and at our STEM centers we train at least 1200 students every month.

Our other rocket being fueled also has a mission that has to do with education. We wanted to share our knowledge and experience with our counterparts who don't have the same access to various different resources as we do. Thus, we organised our first Maker Faire on May 13th 2017 and we are planning to host one this year as well. SPMakers is an event where creativity, craftsmanship and invention are celebrated. It aims to influence everyone who are interested technology and we hope to give a different perspective of STEM education.

Pre-Launch Checks:

Our rocket, "optical-acoustic glasses" was a project that had a bit of a longer stay on the launch pad. It was a creation for people who are visually impaired that warns its owner by colour senses about the direction and intensity of surrounding sounds such as voices and warning signals. This project was really compelling in the beginning. The integration of this rocket took us 2 years to complete. During that time, we were slowly losing hope and people around us were telling us to abandon the rocket and move on to making another one but we worked twice as hard to accomplish our goals and currently the rocket is going

through pre-launch checks. Another rocket we have that will also hopefully break some barriers is a wheelchair we designed for disabled people. The distinct feature of this project is its mecanum wheels. Its prototype has been finished but wasn't satisfying enough for us hence it hasn't been able to launch yet. But when it's done, it will have an increased ability to move and rotate. While we were working on this project we realised that, just a wheelchair is not enough. Thus, we designed a robotics laboratory to make it easier for them to work in an environment which is comfortable. By doing this we wanted to make sure that no disability is an obstacle on the way.

Start Up:

Our next rockets are aligned and ready for departure, the countdown has started. There are more barriers to destroy. One of the rockets is the Library project we run in collaboration with our school. Every year on October 29, the day we celebrate the establishment of the Turkish Republic, we repair a village school's library and donate them books. With the accompaniment of children's happiness, we sing and we play games with them. That is how we try to reflect the meaning of October 29, as well as experiencing it ourselves.

In Turkey, we have a day called Teacher's Day, celebrated on November 24. This day has great significance to us and we refuse to give materialistic presents when we could be giving something with so much more meaning, something influential, such as to see another child get the chance to go to school. For this purpose, since 2015, collaborating with our school we have been running the "Anadolu'da Bir Kızım Var" (I Have a Daughter in Anatolia) project to support two girls' education expenses in Anatolia every year with the help of donations. At the same time, we had plans for animals too; we built houses from recycled materials for cats and birds in our workshop.

The other rocket of ours that is taking off, is the rocket symbolizing the application called "SCODE" that we've designed with our team's graduates. With the help of this application that has been designed to teach children and youngsters how to code, children can easily learn

while enjoying their time as if they were playing a game. This application has been downloaded 50.000 times by now, and it takes children's attention thanks to a variety of game spectrums.

Simultaneous with projects, tinier rockets are taking off from different parts of Anatolia. These rockets will leave a much bigger impact than their size. The "teams" that have taken off from Istanbul, Izmir, Aydın and from Hatay will lead the way to their surroundings, and like a chain, they will expand the FIRST community.

Now, we are in a space enterprise that is not so big but is a part of something bigger than itself. At the heart of this place there are people watching all these launches which are prepared to finally take off. They all have different pasts, different dreams and different interests but they come together here at this place trying to achieve a single great goal, something that connects them all; to boldly go where no man has gone before.

Thank you for your interest in SPARC...

Our mentor's and captains' contact informations are listed below for your questions and feedback:

Abidin ZENGİNLER - *Mentor*
Sainte Pulchérie French High School
abidin.zenginler@sp.k12.tr

Mina DÜNDAR - *Captain*
Sainte Pulchérie French High School
mina.dundar@sp.k12.tr

Ilgar TAŞTEPE - *Vice Captain*
Sainte Pulchérie French High School
ilgar.tastepe@sp.k12.tr