



*FLL QUICKSTART GUIDE*

*UPDATED 2017*

Congratulations! You are thinking about starting a *FIRST* Lego League Team. It is a big commitment but the rewards for your child will last for years and years. Even if your child does not become an engineer, he or she will learn about science and technology; cooperation and competition; presentation skills; teamwork; and will have the most fun ever while doing it. So will you.

Code Orange is a high school robotics team with US *FIRST*, an organization that fosters the interest of elementary and secondary students in science, technology, engineering and mathematics. Our team helps middle school students and their coaches form *FIRST LEGO League* (FLL) teams that use LEGO Mindstorms to meet a challenge set forth to their level. So many people have come to Code Orange requesting advice and guidance in starting new FLL teams, that we realized the need for a manual.

We want to put all of the information that starting teams need in one place. As we started to gather that information, we discovered that there is already huge amount of information available about starting an FLL team. There is a lot on the US *FIRST* website and there is also a lot a many state *FIRST* websites. With all of that information out there, why is there a need for even more?

There are two reasons. First, there is so much information, it can be confusing to a new person. You don't know what you have to read or in what order. The manual will try to give some guidance so you can focus in on the key information you need to know to get started. Once you feel certain you understand the basics, you go back later on and check out the rest. By that time you will be familiar with the program and you will be able to figure out what you need to know and where to find it.

Second, even with all the stuff that is out there, people who want to start team still need advice from those who have done it. The manual has collected that advice, so that anyone starting a team can find their insights in one place.

We did three things to produce this manual. We conducted in depth interviews with people who have coached or started FLL teams to find out both what they thought was most important to know and what they wished they had known when they were starting a team. Second, we examined the public information available on the Internet and pulled out the key pieces that you need to look at first. Third, we updated it in 2017.

We asked people who have either started or coached FLL teams to review our recommendations, so we are confident that we have narrowed it down to the key information to get started. This manual is not intended to provide all the information you need to start a team. It is intended to give you key advice from people who have started teams. We presented the information in the form of FAQs because we thought it would be easy and useful.

It took the work of many people to make this manual possible. I wish to express my gratitude to the following people for all of their efforts and insights:

Jack Auld  
Rochelle Baker  
Marge Brannon  
Shane Cahir  
Nate Deffenbaugh  
Emily Hatch

Cailin Helmick  
Jenny Lee  
Shelley Nordman  
Anu Piravi  
Chetana Piravi  
Ravi Ponmalai

Kris Ponmalai  
Mayra Rubio  
Pauline Tasci  
Brennan Tien  
Rachel Tien

I would like to thank my Eagle Project Coach, Jack Auld. I would also like to make a very special thank you to Shelley Nordman and Emily Hatch. They have worked so hard for so long to make learning robotics and being on a robotics team the most amazing experience. They have inspired me in so many ways. Without their mentorship of me and Code Orange, this manual could not have happened.

## INITIAL INFORMATION FAQ

### **US FIRST has a lot of instructions for starting an FLL team. Where should I start?**

If you haven't gone on the US FIRST web site to see where to start, it is time to go. This link is the starting page for parents who want to get involved with FLL: [http://info.firstinspires.org/hubfs/FLL\\_Assets/FLL-StartATeamOffSeason2017.pdf?utm\\_referrer=http%3A%2F%2Fwww.firstinspires.org%2Frobotics%2Ffll%2Fchallenge-and-season-info](http://info.firstinspires.org/hubfs/FLL_Assets/FLL-StartATeamOffSeason2017.pdf?utm_referrer=http%3A%2F%2Fwww.firstinspires.org%2Frobotics%2Ffll%2Fchallenge-and-season-info)

Other key pages:

1. This page give an overview of Impact, Core Values and Founders:  
<http://www.firstlegoleague.org/about-fll#block-block-10>
2. This page explains the challenge, the rules and judging: <http://www.firstlegoleague.org/challenge>
3. This link will take to a page that explains FLL events and how to find them:  
<http://www.firstlegoleague.org/events>
4. Once you have reviewed what FLL is about and have decided to start a team go to:  
<http://www.firstinspires.org/robotics/fll/start-a-team>. Some advice tells you that a team usually meets one to two times a week for six to eight weeks. That is correct. But you should also plan for at least one Regional competition. Plan for it to last a full day and it may involve some travel.

### **What is the FLL Coaches Handbook?**

This handbook is the instruction manual to take you through planning, preseason, roles and responsibilities, starting the season, core values, the robot game, the project, tournaments, judging, money management and scheduling. You can find it here:

<http://www.firstinspires.org/resource-library/fll/coaches-handbook>

## **GETTING STARTED FAQ**

### **How do I register my team?**

Registration opens in early May. You need to do this as early as you can. US *FIRST* stops accepting registrations when it runs out of the supplies that teams need. This usually happens by September each year. The 2016-2017 registration fee is \$225. Here is the link: <http://www.firstinspires.org/node/3496>.

Parents of the students on the team also have to create an account and complete a consent form for their child at this web site: <http://www.firstinspires.org/resource-library/youth-team-member-consent-and-release-form>. It is free, fast and easy.

### **What is an appropriate number of students on a team?**

We recommend six because at each competition there are three rounds, and then two students can participate in each round. You can have more on your team than six, it is just the optimal number.

### **How do I complete the Youth Protection Program?**

All the coaches with your team have to complete the *FIRST* Youth Protection Program. This makes sure that everyone knows the rules and policies to keep all the students who participate safe. Please keep in mind that the screening process can take up to 36 hours. Here is the link:

<http://www.firstinspires.org/youth-protection>

### **How do I order the FLL Challenge Set??**

The FLL Challenge Set costs \$110. You can only order these through US *FIRST*. The instructions are on this page: <http://www.firstinspires.org/robotics/fll/pricing-and-payment>. US FIRST won't accept your order unless your team has two coaches who have competed the Youth Protection screening.

### **How do I order the Robot Kit?**

On the same pricing page, you can order the Robot Bundle or individual items.

<http://www.firstinspires.org/robotics/fll/pricing-and-payment>

We recommend that you buy the kit through US *FIRST*. The reason is that kit that US *FIRST* sends you comes with additional parts and attachments, so you get everything you need at the same time.

We don't recommend that the team uses a robot kit personally owned by a team member. If a part gets broken or lost, it can lead to an argument. It is best if the team owns the robot kit.

## TIMING FAQ

### **What is a realistic season timeline?**

We advise that you give yourself more time than you think you need.

We also advise you to focus on the most important learning goals rather than trying to finish everything "perfectly" on time. Remember you are working with elementary and middle school students who are there to have fun and learn.

A more relaxed team does not necessarily need to plan a timeline, but if you do want a sample, this is for 2016-2017:

Early May	Start of FLL Registration for new season
End of August	Challenge Released
October	Closing of registration
October	Sign up for Qualifying Tournaments
November - January	Build Robot, Work on Core Values, Create Project
January - February	FLL Semi Final Tournaments
April	World Championship

### **Should an FLL team meet/train before the season starts?**

The team should have preseason meetings so that the team members can get to know each other. They can use that time to pick a name and complete registration. You can also use that time for training, but only if the team members are all interested.

### **How often should an FLL team meet during the season?**

A team should meet at least twice a week and more as the competition gets closer.

**I am worried about getting involved with FLL because so much time is required.**

This program works best if it can be your child's primary commitment. If your child has many other commitments during FLL season, you might consider dropping one of the activities. This is a really special program and you only get as much out of it as you put in.

As a parent, the greatest demand that FLL will place on you is time. But the season only lasts 12 weeks. You don't need to be there for every meeting. If your time constraints really do prevent you from getting involved, please up front with the other parents and coaches on the team, so they know what to expect.

Please remember that your child will take away far more than one year's worth of learning from participating on an FLL team. As you decide whether or not you can afford the time, weigh the future of your child's learning against the benefits from all other things your child is doing.

## CORE VALUES FAQ

### Where can I find basic information about Core Values?

The Core Values are explained on this page: <http://www.firstinspires.org/robotics/fll/core-values>

### How should a new FLL Team prepare for the Core Values presentation?

The best way to prepare for the core values presentation is just being a solid team that works well together.

Other key thoughts:

- Be yourselves. That's what judges look for.
- Practice working together and do team building exercises throughout the season. Then practice in front of as many people as possible, as many times as possible.
- Make sure each member has reviewed the Core Values and has practiced several times applying them in interview format. For example, you could practice by asking the students questions and having them take turns sharing.
- Understand and embrace Core Values throughout the season instead of trying to win or think about what the judges want.
- The best Core Value preparation is to have a genuine team bonding and true friendships...even with other teams. It is evident in front of the judges.
- For the presentation, put down what the students can really talk about and be truthful. It is very important that you don't fake anything.
- Make sure to include all the members in the presentation.

### What do the Judges look for in Core Values presentation?

Use this link to download a copy of the rubric that the judges use:

<http://www.firstinspires.org/resource-library/fll/judging-rubrics>. Core Values is on page 1.

## **PROJECT FAQ**

### **Where can I find basic information about the Project?**

Background information about the 2016-2017 Project is in the document you can download at this page:  
<http://www.firstinspires.org/resource-library/fll/first-lego-league-challenge-overview>

### **What is the best way for a new FLL Team to select a subject for the Project?**

Projects the students are interested are always better than a project chosen by a coach. Even coaching towards an idea takes away from the learning process. The team members really own their project when they work through research, interviews, brainstorming, negotiations, and finally deciding on a topic themselves.

We recommend that your team spend more time on understanding and researching the problem and less time on selecting a specific problem. When the students really understand the problem, topics and solutions will come easily --- and with enthusiasm.

You will find that some students are very passionate about the project, and they will naturally "take the lead" when it comes to subject selection. Still, each team should make sure everyone participates and has input on the selection process.

Some teams have found that a good subject for a project is one that you can talk to an expert about. It real opens the eyes of the team members to many aspects of the project they might not have considered otherwise.

### **How should a new FLL team prepare to present its Project at competition?**

The presentation should be informative and show the judges all the effort that went into the research and the process the team went through to get to its solution.

Please keep in mind that the team should provide opportunities to learn – that is more important than opportunities to win.

Encourage every team member to participate. They will learn so much from research for the project.

### **What do the Judges look for in the Project presentation?**

The rubric that the judges use for the Project appears below. (page 2 of  
<http://www.firstinspires.org/resource-library/fll/judging-rubrics>)

## **ROBOT DESIGN FAQ**

### **Where do I find information about the Robot?**

This page (<http://www.firstinspires.org/resource-library/fll/first-lego-league-challenge-overview>) lets you download a document that covers the Challenge that US FIRST issued for 2016-2017 and has links to information about the Robot Games so your team can plan a design.

### **How should a new FLL team prepare to design and construct the robot?**

A formal design process is not required, especially with younger students. They will most likely design as they go along.

### **Is it required to have professional engineering experience to be a coach?**

The only thing required is enthusiasm. If you don't have a coach who can teach robotic design, contact local FRC teams, and ask for students who can help.

### **How do I find an FRC team so I can ask for a coach?**

You can go to this web page (<http://www.firstinspires.org/team-event-search#type=teams&sort=name&programs=FLLJR,FLL,FTC,FRC&year=2016> <http://www.usFIRST.org/whats-going-on>). Then filter by selecting FIRST Lego League. Then you fill in your country, state and ZIP Code.

It will give you a list of the teams near you. Click on the team number and it will give you the contact information for that team.

### **Does every team member have to do engineering?**

It is important that all team members understand basic engineering. We recommend that you individually test each team member to make sure they understand the basics of robotics and programming, so that everyone will get the most learning out of the program.

### **Do you have any other engineering design advice?**

- Your team should decide on your strategy first, so it can drive the robot design.
- Look at sample robots for inspiration.
- Simplicity in design is important.

### **What do the judges look for in robot design?**

The rubric that the judges use Core Values appears below. (page 3 of <http://www.firstinspires.org/resource-library/fll/judging-rubrics>)

## **FINANCIAL FAQ**

### **How much does it cost to run the team for a year?**

For 2016-17: about \$900.

After the team has started, you can expect it to cost anywhere from \$450 to \$750 each year to keep the team going.

### **What about corporate sponsorships?**

Sponsorships and fund raising work well for some teams. Other teams struggle to find sponsors and donations. Those teams often split the costs among team members, which can cost about \$200/child to pay for the rest.

US FIRST offers this website with team grant information: <http://www.firstinspires.org/robotics/team-grants-faq>, and provide this website for fundraising information: <http://www.firstinspires.org/resource-library/fundraising-toolkit>.

### **What are some money-saving tips?**

You can collect Lego parts from the team members so you don't have to buy them all out of your team's pocket. FLL lets the team use ANY Lego piece from ANY set! The University of Nebraska allows some nonprofit clubs to rent out their NXTs for the school year for a very modest cost.

You can always ask shops and stores for freebies or discounts. Some teams have managed to get donations of ice-cream, Lego minis, and meals for the students.

This web site [bricklink.com](http://bricklink.com) is great source for cheap LEGO parts.

One team saved money by asking team members to bring props from home for the project skit.

## MISCELLANEOUS FAQ

### **What are some helpful resources that your team has used?**

Check out the robotics books by Technology in Action. The series on Mindstorm NXTs and the series on Robotic Design are both awesome.

### **Where can I find regional information for Southern California?**

The home page for *FIRST* California FLL: <http://www.cafirst.org/programs/first-lego-league/> and you can send questions to this email address: [lynn.crockett@legoland.com](mailto:lynn.crockett@legoland.com).

### **What are some innovative ways to have had a positive effect on the team?**

- Eat meals together.
- Celebrate any achievement with a fun activity.
- Use games to honor and respect each other's differences.
- Go on surprise outings that are just fun, fun, fun!
- NEVER play favoritism. EVERY child has something to offer.

### **What are mistakes to avoid?**

One mistake is for the parents and coaches to put out more energy than the students. At meetings, students should talk 70% of the time and coaches 30% of the time. Coaches should not promote their ideas that they think will do better in competition.

Another mistake to avoid is allowing cliques to form among team members. Coaches need to address any kind of non-Core Value behaviors and attitudes right away. It is best to reward positive bonds between teammates.

### **Are there any other tips for a rookie team leader?**

- Be sure to split up the responsibilities among the parents. The team can be very time-consuming.
- Have fun. Don't treat it like a class.
- Try not to win as much as to give the team a positive learning experience.
- Be prepared for "drama" between the team members and even between parents.
- Contact other FLL teams for help.
- Remember that even though it is a lot of work, it is worth it in the end.