

# AN INTRODUCTION TO FIRST LEGO LEAGUE

## TABLE OF CONTENTS

---

- INTRODUCTION
- ROBOT GAME & AWARDS
- TEAM
- BEFORE YOU BEGIN - additional tips and information
- CALENDAR
- COACH PREPARATION CHECKLIST
- RESOURCES (Contact Information)

# How to Start, Run, and Manage a FLL Team

---

By Beyer Robotics

## INTRODUCTION

FIRST LEGO league (FLL) is a program of exploration for children age 9-14 (ages can vary by country), that is designed to get children excited about science and technology, and teach them valuable life skills.

“Guided by two or more adult Coaches, FIRST LEGO League teams (up to 10 members, grades 4-8\*\*) research a real-world problem such as food safety, recycling, energy, etc., and are challenged to develop a solution. They also must design, build, program a robot using LEGO MINDSTORMS, then compete on a table-top playing field.”

From firstinspires.org

Teams will have 8 weeks after the challenge release, called build season, to build their robot. Tournaments held after build season (November - March) will determine which teams will move on to the championships held in April.

### *Students Who Participate in FIRST are*

- 87% more interested in doing well in school
- 88% more interested in college
- 84% plan to take a more challenging math or science course

### *21st Century Work-Life Skills Gained by FIRST Participants*

- 98% improved problem solving skills
- 95% increased time management skills
- 93% conflict resolution skills
- Over 76% strengthened communications skills

FLL teams are a great way to gain excitement from young students who have interests in STEM fields. Through the season, students will learn through hands on experience about programming, teamwork, time management, building, and the engineering process, gaining valuable skills that will carry with them throughout their lives.

## Learn more about the ROBOT GAME

In the game, teams will have two and a half minutes to score as many points as possible by completing tasks on the challenge mat. The robot must be able to function autonomously, and team members are only allowed to touch the robot while it is in base. Below are images of previous year's games logos



Teams can also win awards based on their demonstration of FIRST's Core Values during the competition and season.

### AWARDS

- Champion's Award

### ROBOT AWARDS

- Mechanical Design
- Programming
- Strategy and Innovation
- Robot Performance

### PROJECT AWARDS

- Research
- Innovative Solution
- Presentation

### CORE VALUE AWARDS

- Inspiration
- Teamwork

And more. For more information about the team awards, visit [firstlegoleague.org](http://firstlegoleague.org)

## TEAM

A **team** must consist of 2-10 students, grades 4-8, and 2 adult coaches. Team members must make all decisions and do all the work on the Robot. This does not mean mentors will stand idle, instead of telling the team how to solve a problem, try asking questions like:

1. "What could you change to get the result you want?"
2. "How will that affect...?"
3. "What information do you need to answer that question?"

This program is based to help children learn to become problem solvers by themselves. We understand that adults can become just as passionate about FIRST LEGO League as the children, but adults must always remember that the children come first!

A **Mentor** is any person who works with the team in their area of expertise. Mentors help expose your team members to potential careers in addition to helping them learn the skills necessary to complete the FIRST LEGO League season. The most important quality for a Mentor is someone who enjoys working with young people and wants to help them learn. You may want to consider recruiting someone like:

- Engineer – Teaches skills the team can use to design their robot or complete the Project.
- FIRST® Robotics Competition or FIRST® Tech Challenge team member – Helps the team work through a practice programming challenge, shares strategizing methods, serves as a possible youth role model.
- Science Professional – An expert in this year's Challenge theme presents real examples of science in practice, advises the team on the Project, describes existing solutions, and recommends new sources of information for the team to explore.

Any teacher with experience in any of the STEM fields is also a good choice.

Rotate **team roles** so everyone has an opportunity to try different things. Children often discover that they enjoy a task they wouldn't have volunteered for on their own and it can prevent boys and girls from falling into stereotypical gender roles. Here are examples of the roles or sub-teams you may want to establish within your team:

- ▲ Researching
- ▲ Community Sharing
- ▲ Presenting
- ▲ Strategy Analysis
- ▲ Building
- ▲ Programming
- ▲ Project Management
- ▲ Marketing

## BEFORE YOU BEGIN

### Groundwork

#### Choosing a Meeting Place

When choosing a place for your team to meet, try to choose a meeting place that will provide the following:

- Computer, either a Macintosh or PC.
- Internet access.
- Enough room for your team to set up. Part of the Robot Game is a 4- x 8-foot mission mat which you will need to lay out on a level floor or table.
- A secure place to store team supplies and work in progress between meetings.

#### Purchasing Your Materials

Your team will need certain required materials to participate in FIRST LEGO League.

Grants are available. New Teams can expect to pay \$900 for the following:

- Team Registration – \$225
- LEGO® MINDSTORMS® set: Each team must have a LEGO MINDSTORMS set to participate in the Robot Game (EV3, NXT, or RCX) - \$469
- Challenge Set: All teams must have access to an official FIRST LEGO League Challenge Set. This is the practice field for your team's robot. You will need a new Challenge Set each Challenge year - \$75
- Robot Programming Software – Your robot may only be programmed using LEGO MINDSTORMSEV3, NXT, or RoboLab software (any release). No other software is allowed. - Usually free

### Tips for a Rookie Team

1. Remember, you don't have to be an engineer to be a great Coach.
2. Work with team members to come up with rules for your team at the first meeting.
3. Let the students and parents know that the students do the work.
4. Practice asking questions to guide the students to their own answers instead of telling them your ideas.
5. Don't try to do everything alone.
6. Figure out your funding.
7. Get the team committed to a meeting schedule before the season starts.
8. Make sure all parents have roles – even rotating ones so that they become invested in the progress of your team.
9. Use good time management.
10. Keep it FUN!!! The students will learn to handle frustrations and deadlines better if the element of fun is in the mix.

## SEASON CALENDAR

May 11	Registration Opens at 12:00 pm (noon) ET
August 1	Challenge Sets begin to ship. Mission Model Building Instructions released
August 29	Global Challenge Release at 12:00 pm (noon) ET
Late September - Early October*	Team Registration Closes / Last Chance to Order Products
November – March	Tournament Season
April, 2018	World Festivals in Houston, Texas, USA, and Detroit, Michigan, USA

## PREPARATION CHECKLIST

### **Pre-Season Preparation for the Coach**

Register your team with FIRST LEGO League

Pay your registration fee and order the materials you need.

FIRST LEGO League will usually contact you by email with important updates. Make sure you provide a valid email address when you register, and check that inbox often throughout the season.

Read the Coaches' Handbook.

Review the Core Values.

Decide how team members will be identified or selected.

Identify at least 1 computer your team may use (must have Internet access).

Find out about your region's tournament structure and event registration process.

### **Begin Meeting with Your Team**

Create a meeting schedule.

Review the Core Values with parents and team members (and keep discussing them at each meeting!).

Set up a practice competition area and storage for equipment between meetings.

Have team members begin researching this year's Challenge theme to get a head start on the Project.

Build a Robot Game table or just the borders.

Use the Mission Model building instructions on [www.firstlegoleague.org](http://www.firstlegoleague.org) to build the Mission Models.

Install robot programming software on the computer(s) your team will use.

### **Complete the Challenge**

Download the new Challenge from [www.firstlegoleague.org](http://www.firstlegoleague.org) and review it as a team. It will be released on the last Tuesday in August.

Have team members begin designing, building, and programming your team's robot.

Have team members begin researching for the Project and brainstorming ideas for innovative solutions.

Register for a tournament.

Review the rubrics that will be used to judge your team at tournaments. Discuss them with your team.

Check your email regularly for communication from FIRST LEGO League.

Assign a team member to check the Challenge Updates and Judging FAQ frequently for any new information. ([www.firstlegoleague.org](http://www.firstlegoleague.org))

Prepare any documents required by your tournament organizers

## RESOURCES

The FIRST Inspires website is the best place to find information about the season, project, and game. This is also the place where the challenge video will be released on August 29th.

[firstinspires.org](http://firstinspires.org)

The FIRST Inspires resource library is very useful if you would like to learn more about FLL or for keeping updated on the season and calendar. Here you can find updates, infographics, parent information and more.

[firstinspires.org/resourcelibrary](http://firstinspires.org/resourcelibrary)

Learn more about team 4135, The Iron Patriots as well as our schools other teams and pathway at our website.

Team site: [beyerrobotics.org](http://beyerrobotics.org)

School site: [beyer.mcs4kids.com](http://beyer.mcs4kids.com)

For questions or comments, contact us as [beyerroboticswebsite@gmail.com](mailto:beyerroboticswebsite@gmail.com)