

**FIRST  
LEGO  
LEAGUE**

# Coaches' Handbook





## My Team

Team number: \_\_\_\_\_ Team name: \_\_\_\_\_

Team coaches: \_\_\_\_\_

Team mentors: \_\_\_\_\_

My team meets at \_\_\_\_\_ (location)

from: \_\_\_\_\_ (AM/PM) to \_\_\_\_\_ (AM/PM) every \_\_\_\_\_ (day/days of week)

## Meeting goals

Week 1: \_\_\_\_\_

Week 2: \_\_\_\_\_

Week 3: \_\_\_\_\_

Week 4: \_\_\_\_\_

Week 5: \_\_\_\_\_

Week 6: \_\_\_\_\_

Week 7: \_\_\_\_\_

Week 8: \_\_\_\_\_

## My event

Event date: \_\_\_\_\_ Event location: \_\_\_\_\_

Start time: \_\_\_\_\_ End time: \_\_\_\_\_ Event organizer: \_\_\_\_\_

*FIRST*® LEGO® League

# Coaches' Handbook



14th Edition, 2018 printing

[www.firstlegoleague.org](http://www.firstlegoleague.org)

*FIRST*® *LEGO*® *League* is the result of an exciting  
alliance between *FIRST*® and the LEGO Group.



education

# 2018 *FIRST*® LEGO® League Coaches' Handbook

14TH EDITION, 2018 PRINTING

*FIRST*® LEGO® League

[www.firstlegoleague.org](http://www.firstlegoleague.org)

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## LOGO USAGE

Refer to the branding standards on the *FIRST* website at [www.firstinspires.org/brand](http://www.firstinspires.org/brand).

<b>My Team</b>	ii
Meeting goals	ii
My event	ii
<b>Contacts</b>	6
<b>1 Resources</b>	8
Running your team	8
Key release dates	8
Fundraising	9
Event preparation	9
Connecting with others	10
Thank you, coach!	10
<b>2 What is FIRST® LEGO® League?</b>	11
FIRST Core Values	11
The Challenge	12
FIRST LEGO League events	12
FIRST LEGO League Partners Make it Possible	12
<b>3 My Season Checklist</b>	13
Pre-Season Preparation	13
Begin Meeting with Your Team	13
After Challenge Release (August 1)	13
Optional Tasks	14

## Team Registration Payments

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### **FIRST® FINANCE**

Phone: 1-800-871-8326

Fax: (603) 206-2079

Email: [ar@firstinspires.org](mailto:ar@firstinspires.org)

#### Mail Checks & Purchase Orders to:

*FIRST*

Attn: Finance

200 Bedford Street

Manchester, NH 03101 USA

## LEGO® Education Product

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### **LEGO EDUCATION (U.S. TEAMS ONLY)**

Phone: 1-800-362-4308

Fax: 1-888-534-6784

Email: [orders@legoeducation.us](mailto:orders@legoeducation.us)

#### Mail Purchase Orders to:

LEGO Education

501 Boylston St Suite 4103

Boston, MA 02116 USA

#### Mail Checks (ONLY) to:

LEGO Education

13569 Collections Center Drive

Chicago, IL 60693 USA

### **SPECTRUM EDUCATIONAL SUPPLIES LTD (CANADIAN TEAMS OUTSIDE QUEBEC)**

Phone: 1-800-668-0600

Fax: 1-800-668-0602

Email: [customerservice@spectrumed.com](mailto:customerservice@spectrumed.com)

Address: SPECTRUM Educational Supplies Ltd.  
150 Pony Drive  
Newmarket, Ontario L3Y 7B6 Canada

CONTINUED»

## **BRAULT & BOUTHILLIER (CANADIAN TEAMS IN QUEBEC)**

**Phone:** 1-800-361-0378      **Fax:** 1-514-273-8627  
or 1-514-273-9186

**Address:** Attn: Eric Patenaude  
700 Avenue Beaumont  
Montreal, Quebec H3N 1V5 Canada

## **Replacement LEGO® Parts**

**Web:** <http://service.lego.com>

**Phone:** 1-800-422-5346

## **Questions on the Challenge or Judging**

**FIRST® LEGO® League Robot Game Questions:** [flrobotgame@firstinspires.org](mailto:flrobotgame@firstinspires.org)

**FIRST® LEGO® League Project Questions:** [flprojects@firstinspires.org](mailto:flprojects@firstinspires.org)

**FIRST® LEGO® League Judging Questions:** [fljudge@firstinspires.org](mailto:fljudge@firstinspires.org)

For event questions, contact your local Partner. Find your Partner at  
<https://www.firstinspires.org/about/contact-us>.

## **Questions on LEGO® MINDSTORMS®**

**Support:** <https://www.lego.com/en-us/mindstorms/support>

## **FIRST® LEGO® League Team Support (General Questions and Information)**

**Phone:** 1-800-871-8326

**Email:** [firstlegoleague@firstinspires.org](mailto:firstlegoleague@firstinspires.org)

**Websites:** [www.firstlegoleague.org](http://www.firstlegoleague.org)  
[www.firstinspires.org/fli](http://www.firstinspires.org/fli) (Live Chat Support Available)

## **Find your Local Contact by Country and Region**

**Website:** [www.firstlegoleague.org](http://www.firstlegoleague.org)

## Running your team

➔ **New coaches, start here** *FIRST Steps* (step by step meeting modules):  
<http://info.firstinspires.org/fll-first-steps-request>

## Diversity & Inclusion training

<https://www.firstinspires.org/resource-library/training-equity-diversity-inclusion>

## Participation rules

<http://www.firstlegoleague.org/challenge#block-block-17>

## Team Management downloads

<https://www.firstinspires.org/resource-library/fll/team-management-resources>

- ➔ Event Guide for Teams (Available Aug. 1)
- ➔ Robot Game Rules
- ➔ Budget Worksheet

## LEGO® MINDSTORMS® EV3 curricula and activities

<http://legoeducation.com/downloads>

## Key release dates

### Challenge Materials <http://firstlegoleague.org/challenge>

- ➔ **Robot Game Mission Model Build instructions** – Aug. 1
- ➔ **Challenge** – Overview of Robot Game Missions and Project Parameters – Aug. 1
- ➔ **Challenge Guide** – Rules and Resources for the Project and Robot Game – Aug. 1
- ➔ **Field Setup** – Where to place your Mission Models – Aug. 1

### Event Guide for Teams

What to expect and how to prepare for an Official Event – Aug. 1

## FIRST LEGO League Tournament Dates

Check with your local *FIRST LEGO League* Partner on tournament dates.

Find your Partner at <https://www.firstinspires.org/about/contact-us>





**TIP** Do not worry if you are not an expert on some skill or aspect of the Challenge. You can work through it with your team. In fact, children love to solve problems that befuddle adults. Encourage them to find their own answers.

## Fundraising

Fundraising Toolkit:

<https://www.firstinspires.org/resource-library/fundraising-toolkit>

## Event preparation

### Community events

Community Event Guide – Access via *FIRST* Steps

<http://info.firstinspires.org/fll-first-steps-request>

### Official events

Awards: <https://www.firstinspires.org/robotics/fll/awards>

Judging FAQ: <http://www.firstlegoleague.org/challenge>

Judging rubrics: <https://www.firstinspires.org/resource-library/fll/judging-rubrics>

Event Guide for Teams (available Aug. 1): <https://www.firstinspires.org/resource-library/fll/team-management-resources>

Youth Protection Program: <https://www.firstinspires.org/youth-protection>

# Connecting with others

## Team Social Media Guide

[https://www.firstinspires.org/sites/default/files/uploads/resource\\_library/fll/team-social-media-guide-flljr-fll.pdf](https://www.firstinspires.org/sites/default/files/uploads/resource_library/fll/team-social-media-guide-flljr-fll.pdf)

### Channels

 **Blog** [fllblog.wordpress.com](http://fllblog.wordpress.com)

 **Instagram**

*FIRST*® — [www.instagram.com/legoeducation/first\\_official](https://www.instagram.com/legoeducation/first_official)

LEGO® Education — [www.instagram.com/legoeducation/](https://www.instagram.com/legoeducation/)

 **Pinterest**

*FIRST* — [www.pinterest.com/firstinspires/](https://www.pinterest.com/firstinspires/)

LEGO Education — [www.pinterest.com/legoeducation/](https://www.pinterest.com/legoeducation/)

 **Twitter**

*FIRST* — [twitter.com/FIRSTtweets](https://twitter.com/FIRSTtweets)

*FIRST*® LEGO® League — [twitter.com/firstlegoleague](https://twitter.com/firstlegoleague)

LEGO® Education — [twitter.com/lego\\_education](https://twitter.com/lego_education)

 **YouTube**

*FIRST* — [www.youtube.com/user/FIRSTWorldTube](https://www.youtube.com/user/FIRSTWorldTube)

*FIRST* LEGO League — [www.youtube.com/user/fllglobal](https://www.youtube.com/user/fllglobal)

LEGO Education — [www.youtube.com/user/LEGOeducationUS](https://www.youtube.com/user/LEGOeducationUS)

## Thank you, coach!

Coaches are a huge part of what makes *FIRST*® LEGO® League possible. Whether you are a teacher, parent, or volunteer, you help us bring *FIRST* LEGO League to your team. This program would not succeed without you. We just cannot say it enough – we think you are awesome!



## What is *FIRST*® LEGO® League? [VIDEO](#)



***The Project and the Robot Game are what the students do.  
FIRST Core Values are how they do it.***

## *FIRST*® Core Values

We express the *FIRST*® philosophies of *Gracious Professionalism*® and *Coopertition*® through our *FIRST*® Core Values:

- ✦ **Discovery:** We explore new skills and ideas.
- ✦ **Innovation:** We use creativity and persistence to solve problems.
- ✦ **Impact:** We apply what we learn to improve our world.
- ✦ **Inclusion:** We respect each other and embrace our differences.
- ✦ **Teamwork:** We are stronger when we work together.
- ✦ **Fun:** We enjoy and celebrate what we do!

The ***FIRST* Core Values** help distinguish *FIRST* and *FIRST* LEGO League from other programs. By embracing the *FIRST* Core Values, participants learn that friendly competition and mutual gain are not separate goals, and that helping each other is the foundation of teamwork. Incorporating teamwork activities into each meeting will help your team learn to work together while having fun.

Suggested *FIRST* Core Values activities are included in every module of *FIRST* Steps (<http://info.firstinspires.org/fll-first-steps-request>).

# The Challenge

In the **Robot Game**, teams design, build, program and test autonomous robots using LEGO® MINDSTORMS® technology. The Robot Game playing field reflects the real-world theme for this season. Teams select which missions to solve in **2½ minute** matches. Season-specific rules release with the Challenge but some are evergreen (<https://www.youtube.com/watch?v=chSLW55qBAA>).



## TIP

*Autonomous means the robot moves and operates by itself.*

In the **Project**, teams **research** a real-world problem in the field of the season's Challenge theme. Then they **create** an innovative solution to that problem (either by creating something that doesn't exist or building upon something that does). Teams **share** their findings with others. Teams that go to events must prepare a 5-minute **presentation** about their Project. Learn more about the Project in these videos (<https://www.youtube.com/playlist?list=PLD25D83E836AB3AEB>).

## FIRST LEGO League events

Official events are a great way to celebrate accomplishments with other teams, family, and friends. Contact your Partner (<https://www.firstinspires.org/about/contact-us>) to find out more about the event schedule in your area or download our Community Event Guide to host an unofficial event at your school or organization (<http://info.firstinspires.org/fll-first-steps-request>).

If you plan to attend an official event, download the Event Guide for Teams (<http://www.firstinspires.org/resource-library/fll/team-management-resources>) on or after **Aug. 1**.

## FIRST LEGO League Partners Make it Possible

FIRST LEGO League relies on great people to run the program at many levels, from managing a region to coaching an individual team. We call the leaders in each region the Partners. They are a tremendous resource for you as a coach, and FIRST LEGO League would not exist without them.

Our Partners agree to maintain FIRST LEGO League global standards for tournaments, the Challenge, and overall program administration. Your local Partner is an important resource for information. Contact your Partner about training, events, or other resources available in your area.



## FIND ONLINE

Find your FIRST LEGO League Partner at

<https://www.firstinspires.org/about/contact-us>

## Pre-Season Preparation

- ☐ **Register** your team with *FIRST* LEGO League (Check your region's website for instructions on how to do this).
- ☐ Pay your registration fee and **order** the materials you need.
- ☐ Provide a valid email address when you register, and **check that inbox** often throughout the season for information from *FIRST* LEGO League and your Partner.
- ☐ **Review** the *FIRST* Core Values. ([Chapter 2, Page 11](#))
- ☐ **Decide** how team members will be identified or selected
- ☐ **Identify** at least 1 computer your team may use (must have internet access).
- ☐ **Install** robot programming software on the computer(s) your team will use.
- ☐ **Build** your Robot Game table (or just the borders).
- ☐ **Find out** about your region's tournament structure and event registration process or download our Community Event Guide to help you plan your own event.

## Begin Meeting with Your Team

- ☐ **Check your email!**
- ☐ **Create** a meeting schedule
- ☐ **Review** the *FIRST* 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.

## After Challenge Release (August 1)

- ☐ **Check** your email regularly for communication from *FIRST* LEGO League.
- ☐ **Download** the Challenge from [www.firstlegoleague.org](http://www.firstlegoleague.org) and review it as a team.
- ☐ **Download** the Mission Model building instructions on [www.firstlegoleague.org](http://www.firstlegoleague.org) and **build** the Mission Models from your Challenge Set.

- ☐ Have team members begin **designing, building, and programming** your team's robot.
- ☐ Have team members begin **brainstorming** ideas for innovative solutions.
- ☐ **Register** for an official event. Contact your *FIRST* LEGO League Partner if you are not sure how to apply for a tournament in your area.
- ☐ **Review** the rubrics that will be used to judge your team at tournaments. Discuss them with your team.
- ☐ **Assign** a team member to check the Challenge Updates and Judging FAQ frequently for any new information. ([www.firstlegoleague.org](http://www.firstlegoleague.org))
- ☐ **Practice, practice, practice!**
- ☐ **Prepare** any documents required by your tournament organizers.
- ☐ Make a plan to **celebrate** at the end of your season.

## Optional Tasks

- ☐ Complete several teambuilding activities with your team.
- ☐ Have your team build a practice robot and try some of the programming tutorials that come with your LEGO MINDSTORMS robot set or online. ([www.legoeducation.com/downloads](http://www.legoeducation.com/downloads))
- ☐ Attend an unofficial event or practice scrimmage if available in your area.

[illegible]

# What's **FIRST**?

*FIRST*® programs inspire innovation and leadership through engaging, hands-on robotics challenges developed to ignite curiosity and passion in students in grades K-12.

## **FIRST LEGO LEAGUE JR.**

Ages 6-9 (Grades K-4)

## **FIRST LEGO LEAGUE**

Ages 9-16 (Grades 4-8)  
\*Ages vary by country

## **FIRST TECH CHALLENGE**

Ages 12-18 (Grades 7-12)

## **FIRST ROBOTICS COMPETITION**

Ages 14-18 (Grades 9-12)



*FIRST* is the world's leading child-serving nonprofit advancing science, technology, engineering, and math (STEM). For nearly 30 years, *FIRST* has evolved into a global movement by engaging millions of people with a proven game-changer for preparing kids to solve the world's greatest problems.

*FIRST* builds powerful mentorship relationships between young people and STEM professionals, helping kids gain confidence to explore the innovation process while they learn valuable science, engineering, technology, teamwork, and problem-solving skills.

At the heart of *FIRST* are its *FIRST Core Values*, which emphasize the contributions of others, friendly sportsmanship, teamwork, learning, and community involvement. These include: *Gracious Professionalism*® – Respect for others, being a good sport, and sharing what you learn. *Coopertition*® – Competing hard, but also helping the other teams.

*FIRST* creates the people who will change the world – today and tomorrow.



FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY

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