


The Unofficial **FIRST LEGO League** Survival Guide

Version 1.3

Created by:
THE E3 ROBOTICS CENTER

EXPLORE - EDUCATE - ENGAGE

The logo for The E3 Robotics Center (E3RRC) features the letters 'E3RRC' in a stylized font. The 'E' is blue with white dots, the '3' is blue, the 'R' is grey with a white dot, and the 'C' is grey with a gear-like shape. The text 'THE E3 ROBOTICS CENTER' is positioned above the logo, and the tagline 'EXPLORE - EDUCATE - ENGAGE' is below it.

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General Resources

FLL Season Materials

<https://www.firstinspires.org/resource-library/fll/hydro-dynamics-challenge-updates-and-resources>

Updated for the HydroDynamics Season with links to Mission Model Build Instructions, Field Setup Guide and More.

FLL Forums

<https://forums.usfirst.org/forum/general-discussions/first-programs/first-lego-league?24-FIRST-LEGO-League=>

Place to connect with others in the FIRST LEGO League Program, ask questions and get answers (unofficial) about the robot game, programming, and more.

FLL & FLL Jr Blog

<https://fllblog.wordpress.com/>

Official updated stories and news about the FIRST LEGO League and FIRST LEGO League Jr Program. Many of which are emailed out to coaches in the FIRST Email Blast through the year.

FIRST FLL Resource Library

https://www.firstinspires.org/resource-library?flagged=All&combine=&field_resource_library_tags_tid=All&field_resource_library_tags_tid=All&sort_by=created_1

A ever growing Library of FIRST related materials to help support all of the programs within the FIRST family.

FLL FIRST STEPS Coaches Guide

<http://info.firstinspires.org/fllfirststepsrequest>

A step-by-step guide and lesson plan of how to guide and coach your team during the season to have a successful year. Helps to take the stress out of coaching for new coaches.

Team Communication

Remind App

<https://www.remind.com/>

Text based app mainly used by teachers to stay in contact with parents and students. It is nice since no phone numbers are exchanged in the process.

Teamer

<https://teamer.net/>

App that focuses on sports-based teams, will allow communications of many types to help organize teams, calendar updates and more.

Team Snap

<https://www.teamsnap.com/>

App that focuses on sports-based teams, will allow communications of many types to help organize teams, calendar updates and more.

Team Up

<http://www.teamup.com/>

Calendar based communication system that connects with Google Calendar to help your teams stay up-to-date with team schedules.

Judging Presentations

FLL Judging Rubrics

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

Covers all 3 Judging sessions with the rubrics that are used at all official FIRST LEGO League Events. (Qualifying Tournaments, State Championships, World Festivals, and other official International Invitationals.)

Robot/Technical Judging

GENIUS FLL Technical Judging 2011 - Walton Qualifier - Tips for FLL Teams

https://www.youtube.com/watch?v=ft_cKyqhVBU

A video overview of the Robot Design Judging - Which shows a team during the review process. This is what it will be like for teams within a tournament setting.

The Engineering Design Process

<https://www.youtube.com/playlist?list=PLpaPRqT711tgkLlMGgWyK88cerCrp27kL>

A video playlist which has FLL Team Storm #100 go over a 4 step Engineering Design Process, which teams can use to tackle not only the project but any problem they may face during the season.

Project Judging

Project Avenue - A short documentary on 6 FLL team's Project Journey

<https://www.youtube.com/watch?v=AR0YdJjwryg>

A wonderful documentary that follows 6 FIRST LEGO League Teams during their season as they start their project and then finally go to tournaments and present their projects.

FIRST LEGO League Project How To Videos

<https://www.youtube.com/playlist?list=PLD25D83E836AB3AEB>

This includes not only the Project Avenue video above - but the 3-part video series that goes over, What is the Project, How to have a Successful Project Experience, and Presenting Your Project

Core Values

Starting Points FLL

<https://www.startingpoints.com/fll> - Under the Core Values Tab

Has a list of team building activities that you can do to help improve teamwork and help prepare your team for the Core Values Presentation

EV3 Lessons

<http://ev3lessons.com/corevalues.html?lang=en-us>

Books

General FLL

[Winning Design!: LEGO MINDSTORMS EV3 Design Patterns for Fun and Competition 2nd ed. Edition by James Jeffrey Trobaugh](#)

This book will overview a lot of the design and programming techniques that can help to improve your team on the robot part of FIRST LEGO League.

Programming

[The LEGO MINDSTORMS EV3 Discovery Book: A Beginner's Guide to Building and Programming Robots by Laurens Valk](#)

[The Art of LEGO MINDSTORMS EV3 Programming by Terry Griffin](#)

[The LEGO MINDSTORMS EV3 Discovery Book: A Beginner's Guide to Building and Programming Robots by Laurens Valk](#)

[Exploring LEGO Mindstorms EV3: Tools and Techniques for Building and Programming Robots by Eun Jung Park](#)

Building

[The Unofficial LEGO Technic Builder's Guide by Pawel Sariel Kmiec](#)

The Yoshihito Isoagawa Books are great for both rookie and veteran teams alike. They are brightly colored and have no words, just pictures of the LEGO builds.

[EV3 Idea Book: 181 Simple Machines and Clever Contraptions by Yoshihito Isogawa](#)

[The LEGO Power Functions Idea Book, Volume 1: Machines and Mechanisms by Yoshihito Isogawa](#)

[The LEGO Power Functions Idea Book, Vol. 2: Cars and Contraptions by Yoshihito Isogawa](#)

[The LEGO Technic Idea Book: Simple Machines by Yoshihito Isogawa](#)

[The LEGO Technic Idea Book: Fantastic Contraptions by Yoshihito Isogawa](#)

[The LEGO Technic Idea Book: Wheeled Wonders Paperback by Yoshihito Isogawa](#)

Websites

EV3 Lessons.com

<http://ev3lessons.com/>

A website designed by FIRST LEGO League Team “Droids Robotics” where they have worked with several other teams, coaches, and FLL people to create a website full of mainly programming lessons for EV3 Mindstorms robots. The website also plays host to Robot Design, Core Values, and other FIRST LEGO League Tips for teams.

StartingPoints FLL

<https://www.startingpoints.com/fll>

This website focuses on several great topics to highlight aspects across the FIRST LEGO League program.

TechBrick

<http://techbrick.com/>

Web Site of TechBrick Robotics from Maryland that covers FIRST LEGO League Challenges back to 2004. This included many worksheets, board layouts and more that are great resources for teams to use throughout the season each year.

HighTechKids FLL Coaching Resources

<http://www.hightechkids.org/fll-coaching-resources>

From the Minneapolis based program that helps run Minnesota for all of FIRST LEGO League. They have a good list of resources and powerpoints that cover the FIRST LEGO League Program quite well.

Carnegie Mellon Programming

<http://www.education.rec.ri.cmu.edu/content/lego/curriculum/index.htm>

Programming lessons, mainly NXT based that will go from beginning to advanced programming. Now this also includes a EV3 programming section as well.

YouTube Channels

FIRST LEGO League

<https://www.youtube.com/user/FLLGlobal>

Official Channel of FIRST LEGO League where they post videos directly related to the FIRST LEGO League program and the Challenge Themes each year.

FIRST

<https://www.youtube.com/user/FIRSTWorldTube>

Official Channel of the FIRST program in which they highlight all 4 programs with short informational videos and highlights from top events like the FIRST Championship each year

FIRST LEGO League: Coaches Quick Tips

<https://www.youtube.com/playlist?list=PLpaPRqT711tiQsbC8hOURbvG4uwFpnzcj>

A video playlist of 25 different videos for coaches by coaches to help ensure you focus on the right things, keep you on track and make sure you don't stress over the little things.

BuilderDude35

https://www.youtube.com/channel/UCuXq-jiU0ANeBcF_Tvq1D7g

Videos talking about not just FIRST LEGO League, but WRO and other LEGO Robotics competitions. From building techniques to programming and even FIRST LEGO League help videos.

Hands On Technology

<https://www.youtube.com/user/FLLHot>

A FIRST LEGO League Group in Germany that puts out videos to help cover the robot game rules.

STAMPS Learning

<https://www.youtube.com/channel/UCpli2ubTVWlr7apQpPZ89rw>

Has videos that cover different building techniques and how to use the different LEGO technic pieces. Great for those new teams to get a start on how to build with the robotics LEGO parts.

Programming Videos

Video playlists that will cover EV3 based programming that start with most of the basic blocks and uses.

Darren Wilson

https://www.youtube.com/watch?list=PLdZ4eBU7Xk4p9hRz2rf_NJxMv_LemZGu-&v=cE9N-v7ZrlGg

W.A.F.F.L.E.S. Robotics

<https://www.youtube.com/watch?list=PLJ9p4vPU79w6yjG7ndyn2xp-UMkSGFx9A&v=rla4NSf-PmM4>

Flying Penguins

<https://www.youtube.com/watch?list=PLKgl1etyRDvocPEn5y7PJyv4-2cYKCDEz&v=QsksyD-PrNkQ>

FLL Coach

<https://www.youtube.com/user/TheFLLCoach>

Videos that cover robot design and programming that are from the Food Factor season with the focus of the NXT robot.

LEGO Parts & Suppliers

LEGO Education

<https://education.lego.com/en-us/shop>

The best place to get new robot kits, sensors and other LEGO Mindstorm Robot materials.

BrickLink.com

<https://www.bricklink.com/v2/main.page>

The 'Ebay' for LEGO, look through all the LEGO parts, colors, sets and more. Even create your own account to buy and sell LEGO parts.

LEGO Pick-a-Brick

<https://shop.lego.com/en-US/Pick-A-Brick-11998>

Official LEGO store to get extra pieces for robots or even sets.

Replacement Parts

<https://www.lego.com/en-us/service/replacementparts>

A way to contact LEGO to replace those missing or broken LEGO parts.

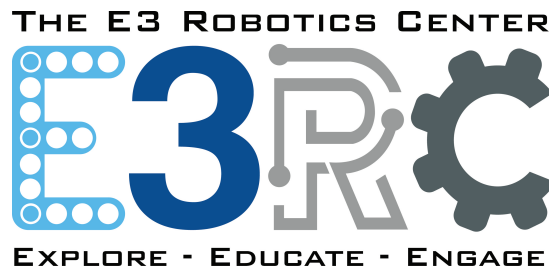
Brick Owl

<http://www.brickowl.com/catalog/lego-parts>

This site is like BrickLink and the other unofficial "LEGO stores" where you can buy and sell LEGO.

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Connect with Us

E3Robotics Center

Focused on running FIRST Robotics Programs, Summer Robotics Camps K-12 and providing help & support for youth-based robotics teams/programs

Website - www.e3robotics.org

Facebook - www.facebook.com/E3RoboticsCenter/

Twitter - twitter.com/E3RoboticsCtr

Instagram - www.instagram.com/e3roboticscenter/