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FLL is the result of an exciting alliance between FIRST® and the LEGO Group

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- FLL Global Innovation

2013 Nature's Fury Challenge



Prepare. Stay Safe. Rebuild



Welcome to the Season Video

Can't access YouTube? [Download the video.](#)



Can FIRST® LEGO® League teams help us master natural disasters? In the 2013 NATURE'S FURY™ Challenge, over 200,000 children ages 9 to 16* from over 70 countries will explore the awe-inspiring storms, quakes, waves and more that we call natural disasters. Teams will discover what can be done when intense natural events meet the places people live, work, and play. Brace yourself for NATURE'S FURY!

*9-14 in the US, Canada, and Mexico

The FLL Challenge has 3 parts - the Robot Game, the Project, and the Core Values.

Robot Game and Project

[Download Challenge](#)

Includes: Project, Robot Game (Field Setup, Missions, Rules)

Core Values

[Learn about the FLL Core Values](#)

Supplemental Materials



- **Project**

- [Project Video](#) (YouTube version)- Project Manager, Jinnel Choiniere, reviews the NATURE'S FURY Project. Can't access YouTube? [Download the video.](#)
- [Project FAQs](#) - This page is the first place to go for answers to Project questions if you've already read the Challenge document. You should also visit here often for answers to questions you never even thought of, because the postings here contain official information that will be in effect at tournaments.
-  [Topic Guide](#)

- **Robot Game**

- [Robot Game Video](#) (YouTube version)- Robot Game designer and Engineer, Scott Evans, describes the NATURE'S FURY Robot Game. Always refer to the written mission/rules for any questions. Can't access YouTube? [Download the video.](#)
- [Robot Game Updates](#) - The first place to go for answers to Robot Game questions if you've already read the Challenge document. Visit here often for answers to questions you never even thought of, because the postings here contain official information that will be in effect at tournaments.
- [Mission Model Build Instructions](#)
- [Robot Game Scoring Sheet](#) - to practice table runs (*coming soon*)
- [Field Mat Overhead View \(.tif\)](#) [Field Mat Overhead View \(.jpg\)](#)



- [Build the FLL Table](#)

- **Judging**

- [Rubrics & Awards](#)
- [Judging FAQs](#)

- **General**

- [Interviews with the Challenge Advisory Team](#) - the topic experts who helped develop the Challenge. Can't access YouTube? [Download the video.](#)

Need Help?

- flteams@usfirst.org - General FLL questions
- flrobotgame@usfirst.org - Robot Game specific questions.
- flprojects@usfirst.org - Project specific questions.
- fljudge@usfirst.org - Judging and Awards specific questions.



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- + Support Our Mission
- + Our Founders
- + Core Values
- + For Parents
- + Participation Rules

Core Values

The FLL Core Values are the cornerstones of the FLL program. They are among the fundamental elements that distinguish FLL from other programs of its kind. By embracing the Core Values, participants learn that friendly competition and mutual gain are not separate goals, and that helping one another is the foundation of teamwork.

- We are a team.
- We do the work to find solutions with guidance from our coaches and mentors.
- We know our coaches and mentors don't have all the answers; we learn together.
- We honor the spirit of friendly competition.
- What we discover is more important than what we win.
- We share our experiences with others.
- We display **Gracious Professionalism®** and **Coopertition®** in everything we do.
- We have FUN!



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Project FAQ

Remember to read the Project document for all the details of this year's FLL Project.

This page is the first place to go for answers to Project questions if you've already read the Project document. You should also visit here often for answers to questions you never even thought of, because the postings here contain official information that will be in effect at tournaments.

Project support beyond this page is available directly from the Project Manager (Jinnel) at fllprojects@usfirst.org (usual response in 1-2 business days).

1 - CAN WE CHOOSE A FORCE OF NATURE THAT IS NOT ON THE LIST?

No, please choose a force of nature on the list in the Project description. We specifically chose relatively short natural events that fit the disaster cycle of prepare, stay safe, and rebuild. There are other forces of nature that could cause destruction, but we have chosen to focus on this list for Nature's Fury:

- Avalanche or landslide
- Earthquake
- Flood
- Hurricane
- Storm (wind, sand, blizzard, or rain)
- Tornado or cyclone
- Tsunami
- Volcanic eruption
- Wildfire








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Topic Guide

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**Note to Parents,
Coaches, and Mentors:**

Some scenarios described in these resources might not be appropriate for very young teams. Always review resource materials before presenting them to your team.

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Resources

Prepare | Stay Safe | Rebuild

This document provides some resources to help start your Nature's Fury Project research. Do not limit yourselves to these websites and books, though. Remember that your library, local hospital, school, local government, historical society, aid association, and area health and social workers, physicians, working scientists, and engineers also can be great resources for your team. Most countries have a weather service or agency in charge of disasters. Your state, province, county, or town probably has its own Emergency Management Department. They may be able to provide you with information about the type of disasters that happen in your area and how to prepare.

Web Resources

Some of these resources are websites that were designed for adults, so don't be afraid to ask a coach or mentor for some vocabulary help.

Forces of Nature

ESA Kids Earth Natural Disasters

<http://www.esa.int/esaKIDSen/Naturaldisasters.html>

The European Space Agency provides child-friendly information about technology and how it is used in case of earthquakes, floods, forest fires, and volcanic eruptions. Also included are activities and quizzes.

Weather Wiz Kids

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

Basic information on a variety of natural disasters (including non-weather) written for kids.

National Geographic Natural Disasters

<http://environment.nationalgeographic.com/environment/natural-disasters/>

Imagery, articles, games, and video on a variety of natural disasters.

U.S. National Oceanic and Atmospheric Administration (NOAA)

http://www.education.noaa.gov/Special_Topics/FLL_Natures_Fury.html

A list of links to help you find more information about a variety of forces of nature.

<http://www.nssl.noaa.gov/primer/>

The National Severe Storms Laboratory provides answers to common questions about forces of nature such as storms and floods.

Natural Disaster Planning

Stop Disasters! Game

<http://www.stopdisastersgame.org/en/home.html>

Disaster simulation game from the United Nations International Strategy for Disaster Reduction.

Includes tips on reducing damage from five different forces of nature.



US Federal Emergency Management Agency: Flat Stanley and Flat Stella Blog

<http://www.fema.gov/blog/Stanley%20and%20Stella>

Child-friendly information about emergency management offices, community volunteers, disaster assistance, disaster operation agencies, preparing for disasters, and more...

Ready Kids

<http://www.ready.gov/kids/>

Learn about disaster planning through facts, games, and exercises. Presented by the U.S. Federal Emergency Management Agency (FEMA).

American Red Cross by Disaster or Emergency

<http://www.redcross.org/prepare/disaster>

Includes descriptions of a variety of natural disasters along with information about planning for, responding during, and recovering after natural disasters strike. Includes brief descriptions of warnings and links to safety checklists. Many available in English and Spanish.

The Weather Channel: Safety and Preparedness

<http://www.weather.com/life/safety/>

Family oriented information about natural disaster safety and preparedness.

Forest Fire Unit

<http://education.mit.edu/starlogo-tng/learn/forest-fire-unit>

Game and curriculum that teaches about forest fires (from Massachusetts Institute of Technology).

Careers

Careers in the Science of Disasters

http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2005_08_12/noDOI.4582097086945489205

Meet several scientists with fascinating careers and career plans: a technologist working on earthquake-monitoring systems, an epidemiologist investigating the post-disaster mitigation, and an engineer working on making the built environment more resilient.

FirstResponder.gov

<http://www.firstresponder.gov/>

Information from the US Department of Homeland Security about careers as first responders in emergency medical services, fire fighting, hazmat, explosives, law enforcement, and search and rescue; preparedness and training; reports and industry newsletters, current technology and standards, and emergency management.

The University of Edinburgh Career Service: Coastguard and Mountain Rescue Service

<http://www.ed.ac.uk/schools-departments/careers/explore/occupations/defence/coastguard-mountain>

Information about careers in rescue services with links to UK services.



Print Resources

Witness to Disaster Series

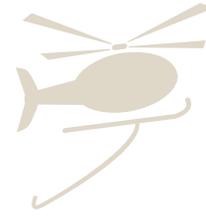
The National Geographic Society

Earthquakes by Judy and Dennis Fradin (2008)

Hurricanes by Judy and Dennis Fradin (2007)

Tsunamis by Judy and Dennis Fradin (2008)

Volcanoes by Judy and Dennis Fradin (2007)



Inside Series

Sterling Publishing Co., Inc.

Inside Hurricanes by Mary Kay Carson (2010)

Inside Tornadoes by Mary Kay Carson (2010)

Inside Earthquakes by Melissa Stewart (2011)

Inside Volcanoes by Melissa Stewart (2011)

Inside Lightning by Melissa Stewart (2011)

Natural Disasters in Action Series

Rosen Central (2008)

Earthquakes in Action by Ewan McLeish

Floods in Action by Chris Oxlade

Landslides and Avalanches in Action by Louise and Richard Spilsbury

Tsunamis in Action by Louise and Richard Spilsbury

Volcanoes in Action by Anita Ganeri

Wildfire by Taylor Morrison

Houghton Mifflin Books for Children (2006)

Blinding Blizzards by Michael Portman

Gareth Stevens Publishing (2012)

Disaster!: A History of Earthquakes, Floods, Plagues, and Other Catastrophes by John Withington

DK Children (2010)

Careers As A First Responder (Essential Careers) by Gina Hagler

Rosen Publishing Group (2012)

Disaster Planning (At Issue Series) by Janel D. Morris

Greenhaven (2008)

The Unthinkable: Who Survives When Disaster Strikes and Why by Amanda Ripley

Crown Publishers (2008)

Note: *The Unthinkable* contains some scenario descriptions that might not be appropriate for young teams.

Staying Alive in Avalanche Terrain by Bruce Tremper

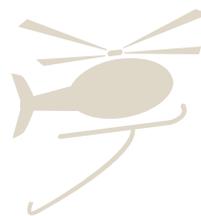
Mountaineers Books (2008)

Ask a Professional

Prepare | Stay Safe | Rebuild

Talking with professionals (people who prepare for, work during, and rebuild after natural disasters) is a great way for your FLL team to:

- Learn more about this season's topic
- Find current data
- Discover potential problems
- Learn what is being done about those problems
- Get feedback on your innovative solution



Who Do You Know?

One of the best research tools for your project is your own team. Think about it. Who do you know? Chances are you know a professional who works with natural disasters in some way. Chances are that a professional can answer your questions about the natural event you chose, the way emergency plans are prepared and put into action, or the efforts required to rebuild after the event has passed.

Think about the technology that allows people to study natural events, predict when they might happen, predict the risk of harm to people and property. Think about the people who work at jobs creating and maintaining that technology. Do you know a scientist, emergency manager, city planner, or meteorologist? Think about people who work during natural disasters. Do you know a first responder? Think about the people who work to clean-up and rebuild after a natural disaster strikes. Do you know someone who has volunteered to help with rescue, shelter, and clean-up when a natural disaster happened in the past? Do you know a building inspector, architect, civil engineer, building contractor, or construction worker? All of those jobs have workers who play a part in being prepared, staying safe, and rebuilding. Make a list.

How Should You Ask?

Next, ask your coach to help you contact the professional your team selected for interview. You can make contact by telephone, email message, or letter. Explain a little about FLL. Briefly explain what you are researching this season. Finally, tell the professional about your goals and ask for the interview. Make sure you choose a day when your coach, mentor, or another adult is available to attend, too.

What Should You Ask?

Your team should do some research before you interview any professional. Advance research will help everyone on your team decide what you want to ask and will help you learn more from the interview. Keep your Project and interview goals in mind. Keep your questions short and to-the-point. Do NOT ask your professional to solve the problem your team chose. Your team's solution must be the work of team members. The professional can

help your team learn about the topic or provide feedback after your team has chosen a solution.

It is easy to lose track of time when you're learning about something really interesting. Decide who will be responsible for politely telling the rest of the team when the interview time is coming to an end. Exhibit Gracious Professionalism® during your interview. Thank the professional for his or her contribution!

At the end of the interview, remember to ask the professional if your team may contact them again. You might think of more questions later. Find out if your professional would be willing to answer more questions by telephone or email. Maybe they will be willing to meet with your team again or give you a tour of their workplace. Do not be afraid to ask.

Who Can You Ask?

Your team might consider contacting people who work in the following professions as you search for professionals to help you with your project. You probably know people who work in other jobs who could help before, during, or after a natural disaster. Remember to check your own list! Many corporate, professional association, government, and university websites include contact information for professionals.

Profession	What they do	Where they work
Architect	Designs buildings, bridges, and other large structures. Also works with contractors to make sure that the structures are constructed the way they were designed.	Private companies, large construction companies, government agencies
Building inspector	Verifies that plans for the construction or repair of buildings meet standards and regulations. Makes sure that the new and renovated structures are built the way they were designed. Assesses damage and specifies minimum repairs.	Government agencies, large construction companies
Cartographer	Measures, analyzes, and interprets geographic and other information to create risk, evacuation, natural event progress, damage, clean-up, and rebuilding maps	Private companies, government agencies, universities and research facilities
City planner	Works to control of the use of land and the design of the environment, including providing transportation networks and protection from the risks of harm from natural events, to guide and ensure the orderly development of settlements and communities.	Private companies, government agencies, universities and research facilities
Civil engineer	Designs and maintains buildings, bridges, utility systems, and other large structures.	Private companies, government agencies, universities and research facilities
Emergency manager	Designs and implements processes used to protect people, property, or organizations from the consequences of disasters. Coordinates warning, evacuation, and rescue efforts. Coordinates victim shelter and care. Coordinates clean-up and rebuilding efforts.	Private companies, government agencies, universities and research facilities

Profession	What they do	Where they work
Emergency medical technician (EMT)	Assesses a patient's condition and performs emergency medical procedures, as needed, until the patient can be transferred to an appropriate destination for advanced medical care.	Ambulance services (paid or voluntary), rescue teams/squads, the military, or a fire or police department.
Firefighter	Extinguishes fires that threaten property and civilian or natural populations and rescues people from dangerous situations, such as collapsed or burning buildings.	Fire services, fire and rescue services, fire brigades or fire departments, the military, government agencies, private companies, universities and research facilities
Geologist	Studies the earth's crust and the way its layers were formed.	Government agencies, private companies, universities and research facilities
Geophysicist	Uses gravity, magnetic, electrical, and seismic methods to study the internal structure and evolution of the earth, earthquakes, the ocean, and other physical features.	Government agencies, private companies, universities and research facilities
Mechanical engineer	Designs and maintains test instruments, rescue equipment, emergency medical equipment, heating and cooling facilities, temporary shelter.	Private companies, government agencies, scientific instrument manufacturers, universities and research facilities
Meteorologist	Studies weather, climate, and the earth's atmosphere; issues predictions and warnings.	Private companies, government agencies, universities and research facilities
Police officer	Assists with evacuation notices, evacuations, rescues, and protecting people and property.	Government agencies
Physician	Helps people who may become sick or hurt during a disaster.	Physician's offices, hospitals, clinics, assisted living facilities, nursing homes, long-term care facilities, universities and research facilities, government agencies
Programmer/ Software engineer	Designs and maintains computer, scientific instrument, factory-automation, materials and personnel tracking, and other software used to monitor natural events, provides communications, provides at-risk and evacuation area maps, monitor rescue and rebuilding efforts.	Universities and research facilities, government agencies, private companies, factory automation manufacturers, scientific instrument manufacturers, computer hardware and software manufacturers
Rescue worker	Locates victims, assesses injuries, administers emergency medical care, and extricates trapped individuals. Transports injured or sick persons to medical facilities.	Private companies, government agencies
Robotics engineer	Designs and maintains test instruments, search and rescue equipment, and other medical and assistive devices	Government agencies, scientific instrument manufacturers, computer manufacturers, universities and research facilities



Profession	What they do	Where they work
Seismologist	Studies earthquakes and the structure of the earth, by both naturally and artificially generated seismic waves.	Government agencies, private companies, universities and research facilities
Volcanist	Also known as a volcanologist. Observes volcanic eruptions, collects eruptive products including tephra (such as ash or pumice), rock, and lava samples.	Government agencies, universities and research facilities





Glossary

Prepare | Stay Safe | Rebuild

Here you will find a list of terms that relate to natural disasters along with their meanings. Some you will find in your Project materials. Some you will come across as you research the challenges identified by your research and your team's innovative solution. Remember to ask your coach or another adult for help with any new words from your research.

Term	Definition
architect	A person who designs buildings, bridges, and other large structures. An architect also works with builders to make sure that the buildings are constructed the way they were designed.
avalanche	A large mass of snow, ice, and rocks sliding swiftly down a mountain.
building inspector	A person, often a government employee, who verifies that the plans for the construction or repair of permanent structures meet standards and regulations. They make sure that the new and renovated structures are built the way they were designed. Building inspectors might also assess damage to structures and determine the minimum repairs required to restore the safety of a damaged building, bridge, dam, tunnel, dock, breakwater.
blizzard	A heavy snowstorm with very strong, cold winds.
cartographer	A person who measures, analyzes, and interprets geographic information to create maps and charts for political, cultural, educational, and other purposes. Cartographers are general mapmakers, and photogrammetrists are specialized mapmakers who use aerial photographs to create maps.
city planner	A professional who works to control of the use of land and the design of the environment, including providing transportation networks and protection from the risks of harm from natural events, to guide and ensure the orderly development of settlements and communities.
cyclone	A storm with strong winds that move around a center of low pressure.
earthquake	A movement of the ground that feels like strong shaking or trembling. It is caused by shifts in rock underground or by the action of a volcano.
emergency manager	A professional who deals with the processes used to protect people, property, or organizations from the consequences of disasters.
engineer	Someone who uses science to create new things that people can use. Engineers create things like bridges, roads, computers, telescopes, tractors, airplanes, medical machines and tools, test instruments, and many others.
first responder	A trained professional who provides emergency medical, fire, hazardous materials (hazmat), explosive materials, law enforcement, or search and rescue services during and immediately following a disaster.

Term	Definition
flood	A great overflow of water onto a place that is usually dry.
forces of nature	Wind, rain, snow, hail, lightning, gravity, seismic or volcanic activity.
geologist	A specialist in the science that deals with the history of the earth and its life especially as recorded in the rocks.
geophysicist	A specialist in the physics of the earth including the fields of meteorology, hydrology, oceanography, seismology, volcanology, magnetism, radioactivity, and geodesy.
hurricane	A very strong windstorm, often with heavy rain, in which the wind blows in a circle at 73 or more miles per hour. Hurricanes usually start in the Caribbean Sea and move northward.
landslide	A great mass of rocks and earth sliding down the side of a hill or mountain.
meteorologist	An expert in the science that studies weather, climate, and the earth's atmosphere.
natural disaster	Something that happens when a force of nature becomes so powerful that property could be damaged or people could be at risk of harm.
natural event	An event caused by nature, such as wind, rain, snow, hail, lightning, gravity, seismic or volcanic activity. Not all natural events cause a natural disaster. For example, a hurricane that remains at sea and does not damage property or harm people is a natural event — but not a natural disaster. For the purpose of this project, consider only these natural events: avalanche or landslide, earthquake, flood, hurricane, storm (wind, sand, blizzard, or rain), tornado or cyclone, tsunami, volcanic eruption, and wildfire (not started by people).
rescue worker	Someone who works to bring people out of danger, attack, or harm, especially after a disaster or accident. Examples of rescue workers include police officers, firefighters, emergency medical technicians (EMTs), paramedics, and search and rescue (SAR) personnel.
safe	Free from harm or danger.
seismologist	Also known as a seismographer. A geophysicist who specializes in the art of registering the shocks and movements of earthquakes.
storm	A strong wind along with heavy rain, snow, sleet, or hail. A storm often includes thunder and lightning.
tsunami	Also known as a tidal wave. A natural event that occurs when a great sea wave is produced by submarine earth movement or a volcanic eruption. Ninety percent of all tsunamis are generated by earthquakes.
volcanic eruption	A natural event that occurs when melted rock from deep inside the earth is thrown up to the surface.
volcanologist	A person who studies the formation of volcanoes and their current and historic eruptions.
wildfire	A fire that burns, often uncontrollably, over a large area of undeveloped land and spreads to threaten people and property in developed areas.



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Robot Game Updates

Remember to read the Robot Game section of the Challenge. This includes Field Setup, Missions, and Rules.

This page is the first place to go for answers to Robot Game questions if you've already read the Robot Game section. You should also visit here often for answers to questions you never even thought of, because the postings here contain official information that will be in effect at tournaments.

Robot Game support beyond this page is available directly from the designer/author (Scott) at flrobotgame@usfirst.org (usual response in 1-2 business days). PLEASE SEE RULE 44.

2 – PLANE PULLEY

Even for correct setups, the rate of the plane's descent varies. Because of this, the referee will be lenient while scoring the cargo plane mission. If the plane departs and hits nothing, it will automatically score as reaching the LT BLUE zone. All other departed planes will score as reaching the YELLOW zone unless they hit something so plentiful or massive as to make it obvious the mission is a failure.

1 – BORDER WALL HEIGHT

As described on the Field Setup page, there is a range of legal heights for the FLL table border walls. Be sure you understand how different border wall heights affect the progress mission and the cargo plane mission. Specifically, the levers for those missions could be a little higher or a little lower than the ones on your practice table. Design with this in mind.



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Judging and Awards

Questions about Judging? Check out the [Judging FAQ](#) or email fljudge@usfirst.org

FLL is known around the globe not only for what we do (the Robot Game and Project), but also how we do it, with Core Values at the heart. The rubrics used for judging reflect these three equally important aspects of FLL.

Official tournaments must follow the judging and awards structure determined by FLL. Although the audience mostly sees teams playing the Robot Game at tournaments, teams are also being judged on:

- Core Values
- Project
- Robot Design

The Core Values Poster and the Robot Design Executive Summary are additional tools that may be used to help facilitate discussion in the Core Values and Robot Design Judging sessions at official FLL events. Your Operational Partner will distribute the instructions to teams outlining the information to be included if your Region plans to require the Core Values Poster and/or the Robot Design Executive Summary at its events. Please contact your Operational Partner ([US/CAN](#) & [outside US/CAN](#)) for further information. The Core Values Poster and the Robot Design Executive Summary WILL be used as part of the Judging of World Festival.

See also [FLL Participation Rules](#).


[📄 Rubrics](#)
[📄 Awards](#)
[📄 Team Profile Sheet](#)

Some regions refer to these as Team Introduction, Team Profile or Team Information Pages; others prefer to use their own form. As each region determines if/how this form will be used (for example they may collect in advance via email or ask you to bring multiple copies to provide directly to the judges), please check with your local event organizer if you have any questions regarding plans for use in your area.

About Judging:

- Teams must participate in all elements of an FLL competition including the Robot Game and all three judged areas in order to be eligible for any FLL Core Award.
- Judges use the rubrics to help them determine which teams will receive awards.
- With the exception of the Robot Performance award, FLL awards are determined by a deliberation process, which is formulated around discussions of team performance in each category.
- If a team does not exhibit Core Values at a tournament, they will be disqualified from winning any awards – including Robot Performance, no matter how well they scored.
- Adults are strictly prohibited from directing team members or interfering with the judging process or robot rounds in any way.
- No team is allowed to win two awards, unless one of the awards is for Robot Performance. Robot Performance is the only category based solely on score.
- While they may attend other events for fun, teams are only eligible to win awards at the first official event of each qualifying level attended during the season.

FLL Global Innovation

The *FIRST*® LEGO® League Global Innovation is designed to encourage and assist FLL teams to further develop their innovative solutions to real-world problems. Submissions to the FLL Global Innovation can only be made by teams officially registered for the current Challenge season.

Note: The FLL Global Innovation is optional and in no way affects the judging outcome of qualifying events or tournaments.



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Judging FAQ

For official answers to questions about FLL judging, please email fljudge@usfirst.org.

Q: Can elimination or alliance rounds be used to determine Robot Performance Award?

A: The Robot Performance Award recognizes a team that scores the most points during the Robot Game. Teams have a chance to compete in at least three 2.5 minute matches and only the highest score out of the three matches counts. While some events may hold elimination or alliance matches for the excitement and fun, these may not be used to determine the Robot Performance Award. Instead, any awards provided for elimination or alliance matches may only be Local Awards. Note that scores from any alliance or elimination rounds will not be used to determine the Robot Performance bar (at or better than the top 40%) needed to be met for qualifier advancement or Champion's Award consideration.

Q: Does FLL have an official policy on how teams advance to Championships from Qualifiers?

A: Teams are eligible for awards and advancement only at the first official FLL event of each qualifying level attended during season. In most cases, event capacity within a region limits team participation to only one qualifying event each season. In some cases, teams may be able to attend more than one qualifying event, but it is important to note that they do so for fun only—they would not be able to win awards or be advanced to a Championship based on performance at a second or additional event.

FLL's qualifier advancement policy is based on Champion's Award criteria. As described [below](#), Champion's Award criteria require that the team, performs well in all three judged areas (Project, Robot Design and Core Values) and receives a Robot Performance score in the top 40% of official Robot rounds among other requirements.

It is important for teams to understand that it is possible for a team to receive a 1st Place Core Award but not advance to Championship based on a Robot Performance score below the top 40% of teams at the event. Or, a team may win 1st Place in Robot Performance but not advance to Championship due to not having performed well in one or more of the three judged areas.

Q: Is it possible to win the Robot Performance Award based on field/game score without doing the Project?

A: It is not possible to win the Robot Performance Award without doing the Project. Teams must participate in all 3 judged areas (Project, Core Values and Robot Design) and the Robot Game to be eligible for any Core Awards...and Robot Performance is a Core Award.

The philosophy behind this rule is that if a team comes to the event and only participates in one area, it is almost like having a 20 or 30 member team relative to a team that does participate in all areas and embraces the spirit of discovery by focusing on all challenge elements.

Q: How is the Champion's Award determined? Are certain weights used?

A: FLL's Champion's Award recognizes a team that "embodies the FLL experience, by fully embracing our Core Values while achieving excellence and innovation in both the Robot Game and Project."

At an official event judges will look for balanced, strong performance across all 3 areas; this means that all three judged sessions (Core Values, Robot Design, and Project) are weighted equally to determine the initial group of Champion's candidates. All candidates must also meet the following requirements:

- Robot: The team must score in the top 40% of all teams participating in the Robot Game at the event.
- Project: The team must complete all parts of the Project, including the identification of a real world problem related to the Challenge theme, creation of an innovative solution and sharing their research and solution with others, as well as any other season-specific requirements that may exist.
- Core Values: The team must adhere to all Core Values throughout the event and the season.

All candidate teams are then reviewed during a deliberative process that considers Robot Performance placement and other qualitative factors. Final determination of the award winner(s) is based on a vote of the full judging panel.



Q: What happens if my team goes past 5 minutes when giving their Project presentation?

A: Some judges may warn the team that they have gone over five minutes, while others will allow the team to finish. In some cases, the tournament may need to keep a very strict time schedule, so judges will end the presentation at five minutes. If the judges allow a team to go over five minutes, that may reduce the amount of time judges have to ask questions and could affect how the judges assess your team. Your team should practice timing their presentation before the tournament to reduce the chance they will go over five minutes.

Q: Can the Coach help the team setup their Project presentation?

A: As stated in the Project document, teams should plan a presentation that they are able to set up and break down with no adult help. The coach should refrain from helping the team setup any presentation materials or props. There may be rare instances when a presentation prop or other item is too bulky or heavy for team members to carry. In this instance, some tournaments may allow the coach to assist the team, or the tournament may provide volunteers to move the heavy/bulky item. Check with your tournament organizer before the tournament if you have any questions about tournament policies and procedures.



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Our Mission | Marketing Tools | Challenge & Resources | Events | For Parents

FLL is the result of an exciting alliance between FIRST® and the LEGO Group

- ➔ Support Our Mission
- ➔ Our Founders
- ➔ Core Values
- ➔ For Parents
- ➔ Participation Rules

FLL Participation Rules

Like other team activities, FIRST® LEGO® League (FLL®) has basic ground rules. Failure to abide by these rules could result in ineligibility for awards at a tournament or other consequences deemed necessary by judges, referees, tournament organizers, FLL Operational Partners, FLL headquarters, or their designated representatives. Additional rules and awards criteria may be found through the links below.

Questions? Contact flteams@usfirst.org

General

- Team members must make all decisions and do all the work on the Robot Game and Project. This includes deciding on strategy, building, programming, researching, choosing a problem and innovative solution, and presenting at a tournament.
 - Anyone who works with the team (coaches, mentors, topic experts, parents, etc.) may teach team members new skills, handle logistics for the team, ask questions to get team members thinking, and remind them of the FLL rules. Adults play an important role in coaching and supporting their team, but the team's robot and project should be the work of team members.

Coach

- An FLL team must have a minimum of one (1) adult coach.

Team Members

- An FLL team must have a minimum of two (2) and a maximum of ten (10) children. A team with more than ten (10) children will not be eligible for awards at an official FLL tournament.
- Children may be members of only one (1) FLL team per season.
- No team member may exceed the maximum allowed age in your region prior to January 1 of the year the Challenge is released.
 - Allowed ages in most countries: 9-16 years
 - Allowed ages in U.S., Canada, and Mexico: 9-14 years

Robot Game

- Each team's robot must be built in accordance with all allowable parts, software and other rules. For complete Robot rules, visit the current [Challenge page](#).

Project

- Teams must demonstrate completion of all three (3) steps of the FLL Project (identify a problem, develop an innovative solution, and share with others) as part of their presentation, and fulfill any other requirements as defined in the annual Project document. For complete Project rules, visit the current [Challenge page](#).



Tournaments

- All teams must be officially registered and paid before they will be allowed to participate in official FLL tournaments.
- Many FLL regions have multiple levels of competition. While teams may attend other events for fun (if space allows), they are only eligible to win awards at the first official event of each level attended during the season. Teams may not receive multiple chances to advance to the next level of competition. Please contact your [FLL Partner](#) with any questions about how this works in your region.
- *FIRST* requires every team at an official FLL event to be accompanied by at least one (1) supervising adult (this adult could be a coach or a parent). Supervising adults should be assigned to no more than one (1) team.
- Teams must participate in the robot performance rounds as well as all three (3) judging sessions (Core Values, Robot Design, and Project) in order to be eligible for any [FLL Core Award](#).
- All team members present at an event are expected to participate in all three (3) judged sessions, in addition to showing up as a team for the Robot Game.
- FLL expects teams and those associated with the team to uphold and display [FLL Core Values](#) at all times, not just during Core Values judging sessions.
- Only tournament officials (judges, referees, and other tournament workers) may direct team members while judging sessions and robot matches are in progress. Any other person instructing, prompting, heckling, or otherwise interfering with a team or tournament worker during judging sessions or robot matches may be asked to leave by tournament officials. In severe cases, these activities may also affect the team's eligibility for awards and/or participation in the tournament.

Judging and Awards

- For awards eligibility criteria, visit the [Judging and Awards page](#).

Specific U.S./Canada Requirements

- All team members and coaches must submit a signed Consent and Release form at their first tournament of the season. Some tournaments may collect forms earlier. Check with your [Partner](#) if you have any questions about how to submit forms in your region.

Updates to these rules will be communicated via email to registered FLL coaches.



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Directions: For each skill area, clearly mark the box that best describes the team's accomplishments. If the team does not demonstrate skill in a particular area, then put an 'X' in the first box for Not Demonstrated (ND). Please provide as many written comments as you can to acknowledge each team's hard work and to help teams improve. *When you have completed the evaluation, please circle the awards for which you would like this team to be considered.*

	Beginning	Developing	Accomplished	Exemplary	
Inspiration	Discovery Balanced emphasis on all three aspects (Robot, Project, Core Values) of FLL; it's not just about winning awards				
	N D	emphasis on only one aspect; others neglected	emphasis on two aspects; one aspect neglected	emphasis on all three aspects	balanced emphasis on all three aspects
	Team Spirit Enthusiastic and fun expression of the team identity				
	N D	minimal enthusiasm AND minimal identity	minimal enthusiasm OR minimal identity	team is enthusiastic and fun; clear identity	team engages others in their enthusiasm & fun; clear identity
	Integration Application of FLL values and skills outside FLL (ability to describe current and potential examples from daily life)				
N D	team does not apply FLL values and skills outside FLL	team able to describe at least one example	team able to describe multiple examples	team able to describe multiple examples, incl. individual stories	

Comments:

Teamwork	Effectiveness Problem solving and decision making processes help team achieve their goals				
	N D	team goals AND team processes unclear	team goals OR team processes unclear	clear team goals and processes	clear processes enable team to accomplish well defined goals
	Efficiency Resources used relative to what the team accomplishes (time management, distribution of roles and responsibilities)				
	N D	limited time management AND unclear roles	limited time management OR unclear roles	excellent time management and role definition allows team to accomplish most goals	excellent time management and role definition allows teams to accomplish all goals
	Kids Do the Work Appropriate balance between team responsibility and coach guidance				
N D	limited team responsibility AND excessive coach guidance	limited team responsibility OR excessive coach guidance	Good balance between team responsibility and coach guidance	team independence with minimal coach guidance	

Comments:

Gracious Professionalism™	Inclusion Consideration and appreciation for the contributions (ideas and skills) of all team members, with balanced involvement				
	N D	unbalanced team involvement AND lack of appreciation for contributions	unbalanced team involvement OR lack of appreciation for contributions	balanced team involvement AND appreciation for contributions of most team members	balanced team involvement AND appreciation for contributions of all team members
	Respect Team members act and speak with integrity so others feel valued-- especially when solving problems or resolving conflicts				
	N D	not evident with majority of team members	evident with majority of team members	almost always evident with all team members	always evident, even in the most difficult situations
	Cooperation™ Team competes in the spirit of friendly competition and cooperates with others				
N D	not evident with majority of team members	evident with majority of team members	almost always evident with all team members	always evident, even in difficult situations--and team actively helps other teams	

Comments:

Awards Consideration:	Inspiration	Teamwork	Gracious Professionalism™
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Directions: For each skill area, clearly mark the box that best describes the team's accomplishments. If the team does not demonstrate skill in a particular area, then put an 'X' in the first box for Not Demonstrated (ND). Please provide as many written comments as you can to acknowledge each team's hard work and to help teams improve. When you have completed the evaluation, please circle the awards for which you would like this team to be considered.

		Beginning	Developing	Accomplished	Exemplary
Mechanical Design	Durability	Evidence of structural integrity; ability to withstand rigors of competition			
	N D	quite fragile; breaks a lot	frequent or significant faults/repairs	rare faults/repairs	sound construction; no repairs
	Mechanical Efficiency	Economic use of parts and time; easy to repair and modify			
	N D	excessive parts or time to repair/modify	inefficient parts or time to repair/modify	appropriate use of parts and time to repair/modify	streamlined use of parts and time to repair/modify
	Mechanization	Ability of robot mechanisms to move or act with appropriate speed, strength and accuracy for intended tasks (propulsion and execution)			
N D	imbalance of speed, strength and accuracy on most tasks	imbalance of speed, strength and accuracy on some tasks	appropriate balance of speed, strength and accuracy on most tasks	appropriate balance of speed, strength and accuracy on every task	
<i>Comments:</i>					
Programming	Programming Quality	Programs are appropriate for the intended purpose and would achieve consistent results, assuming no mechanical faults			
	N D	would not achieve purpose AND would be inconsistent	would not achieve purpose OR would be inconsistent	should achieve purpose repeatedly	should achieve purpose every time
	Programming Efficiency	Programs are modular, streamlined, and understandable			
	N D	excessive code and difficult to understand	inefficient code and challenge to understand	appropriate code and easy to understand	streamlined code and easy for anyone to understand
	Automation/Navigation	Ability of the robot to move or act as intended using mechanical and/or sensor feedback (with minimal reliance on driver intervention and/or program timing)			
N D	frequent driver intervention to aim AND retrieve robot	frequent driver intervention to aim OR retrieve robot	robot moves/acts as intended repeatedly w/ occasional driver intervention	robot moves/acts as intended every time with no driver intervention	
<i>Comments:</i>					
Strategy & Innovation	Design Process	Ability to develop and explain improvement cycles where alternatives are considered and narrowed, selections tested, designs improved (applies to programming as well as mechanical design)			
	N D	organization AND explanation need improvement	organization OR explanation need improvement	systematic and well-explained	systematic, well-explained and well-documented
	Mission Strategy	Ability to clearly define and describe the team's game strategy			
	N D	no clear goals AND no clear strategy	no clear goals OR no clear strategy	clear strategy to accomplish the team's well defined goals	clear strategy to accomplish most/all game missions
	Innovation	Creation of new, unique, or unexpected feature(s) (e.g. designs, programs, strategies or applications) that are beneficial in performing the specified tasks			
N D	original feature(s) with no added value or potential	original feature(s) with some added value or potential	original feature(s) with the potential to add significant	original feature(s) that add significant value	
<i>Comments:</i>					
Awards Consideration:		Mechanical Design	Programming	Strategy & Innovation	

FLL Core Awards

Champion's Award

This award recognizes a team that embodies the FLL experience, by fully embracing our Core Values while achieving excellence and innovation in both the Robot Game and Project.

Robot Awards

Mechanical Design

This award recognizes a team that designs and develops a mechanically sound robot that is durable, efficient and highly capable of performing challenge missions.

Programming

This award recognizes a team that utilizes outstanding programming principles, including clear, concise and reusable code that allows their robot to perform challenge missions autonomously and consistently.

Strategy & Innovation

This award recognizes a team that uses solid engineering practices and a well-developed strategy to design and build an innovative, high performing robot.

Robot Performance

This award recognizes a team that scores the most points during the Robot Game. Teams have a chance to compete in at least three 2.5 minute matches and their highest score counts.

Project Awards

Research

This award recognizes a team that utilizes diverse resources to formulate an in-depth and comprehensive understanding of the problem they have identified.

Innovative Solution

This award recognizes a team's solution that is exceptionally well-considered and creative, with good potential to solve the problem researched.

Presentation

This award recognizes a team that effectively communicates the problem they have identified and their proposed solution to both the judges and other potential supporters.

Core Values Awards

Inspiration

This award celebrates a team that is empowered by their FLL experience and displays extraordinary enthusiasm and spirit.

Teamwork

This award recognizes a team that is able to accomplish more together than they could as individuals through shared goals, strong communication, effective problem solving and excellent time management.

Gracious Professionalism™

This award recognizes a team whose members show each other and other teams respect at all times. They recognize that both friendly competition and mutual gain are possible, on and off the playing field.

Judges Awards

During the course of competition the judges may encounter teams whose unique efforts, performance or dynamics merit recognition. Some teams have a story that sets them apart in a noteworthy way. Sometimes a team is so close to winning an award that the judges choose to give special recognition to the team. Judges Awards allow the freedom to recognize remarkable teams that stand out for reasons other than the Core Award categories.

Examples include:

Against All Odds *or* Overcoming Adversity *or* Perseverance

This award goes to the team that improvises and overcomes a difficult situation while still making a respectable showing, with an attitude that shows, “We can overcome incredible odds if we never give up, no matter what!”

Rising Star

This award recognizes a team that the judges notice and expect great things from in the future.

Special Recognition Awards

Outstanding Volunteer Award

The FLL program would not exist without its volunteers. This award honors an extraordinary volunteer(s) whose dedication to the FLL program has a positive impact on the team experience.

Adult Coach/Mentor Award

Many teams reach significant milestones thanks to their close relationship with an adult mentor. This award goes to the coach or mentor whose wisdom, guidance, and devotion are most clearly evident in the team's discussion with the judges.

Young Adult Mentor Award

FLL presents this award to the young adult, high school or college mentor whose support, impact, inspiration, and guidance are most clearly evident in the team's discussion with the judges.



FLL Team Information Sheet

FLL Team Number:

Team Name:

School/Affiliation/Location:

Team Members:

Coach

Mentors

Robot's Name

Team Picture

Robot Design Information

Tell the judges information you want them to know about your robot's design. You might tell them something about your game strategy you think is cool, or some interesting attachment you designed, or some other facts about your robot that you think are cool.

Project Information

Tell the judges information you want them to know about your project. Examples include something special you learned, who you shared your research with, what experts you talked to, and what you learned about your community.

Core Values Information

Tell the judges what you learned about FLL Core Values this season. Let them know about problems you solved, what you've learned about working together as a team and what Gracious Professionalism means to you.

Fun Facts About Our Team

Tell the judges anything fun about your team that you want. It could be a funny story, your team motto, or anything else you'd like them to know.

- We have provided Robot Design supporting materials
- We have provided Research Project supporting materials
- We would like our presentation materials returned to us