TEAM 1538 / THE HOLY COWS

FIRST LEGO LEAGUE

2018/2019 Volunteer Training Information

Collaboration between FRC Team 1538 / The Holy Cows and SoCal Robotics League

Volunteer Info

Thank you for agreeing to serve as a judge for a *FIRST*®LEGO® League event!

As a judge you bring professional accomplishments that make you an ideal role model for the students as well as the engineers and other professionals participating in the program. In other words, you are a hero!

We are delighted that you could find the time in your busy schedule to assist us in reaching our mission.

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Remember they are kids!

FLL tournaments are supposed to be FUN!

- Focus on the *FIRST*® LEGO® Leagues missions to get children excited about science and technology
- Make eye contact and Smile!
- Be aware of your tone of voice – indicate interest and excitement
- Always treat teams and their work with respect
- One negative comment from a judge can have a devastating effect on teams
- Make it your goal as a judge to ensure that the teams:
  - Know what they did well
  - Have a positive experience showcasing their solution

Be Fair

- Judge the teams based upon the information provided to you by *FIRST*®LEGO® League
- Personal opinions that are not based on these materials and the team's performance should never be part of the judging process
- Team's performance at previous events/seasons should not factor into deliberations

Conflict of Interest

To protect the integrity of the awards, *FIRST*®LEGO® League requires that judges with any connection to a team (casual or otherwise):

- Advise the Judge Advisor and other judges of the affiliation
- Forgo commenting upon the team
- Abstain from voting for the team
- Refrain from influencing the judges' decisions on such team in any manner

What to Expect Judging Children

Some children are talkative, while others are very shy

- You may have to ask more questions of some teams to arrive at the same information another team gives you voluntarily
- Try to ask open ended questions that do not allow the teams to answer with a “yes” or “no”, and encourage the teams to elaborate on their answers
- Be polite and respectful, but do not allow the coach to answer questions for the team
- Try to ensure that each team leaves your judging room feeling positive about their performance in *FIRST*®LEGO® League
- Have age appropriate expectations

Understanding Differences

FIRST® is great for every student despite their difference, *FIRST*® gives them a place to be part of a team. Children with limited social skills may still be knowledgeable

- Some kids just have trouble expressing their ideas
- All children have individual differences. Remember this fact and adjust
- your expectations accordingly
- You may have asked the wrong question! Often kids have an intense interest in one area to the exclusion of others areas
- Lack flexibility in dealing with new situations or abstracting ideas
- May blurt out blunt or inappropriate comments
- May distance themselves from their team physically

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Additional Information

- Minimum 10 minute session for judging
– 5 minute maximum for presentation, uninterrupted that **includes** setup time
- Teams may
    perform a skit
    present PowerPoint
    sing a song
    choose any creative way to share their research
– Followed by 5 additional minutes for judge questions

Additional Information

- At least 1 but no more than 2 adults in judging room, out of eyeline from the students
- Bring paper, pen or pencil and water and a jacket if you run cold
- Bring a timekeeping device, time both the judging sessions and your deliberations

Robot Design Judging

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Robot Design

What are we looking for in a good Robot Design?

- We are tasked with selecting the robots that best meet the requirements (completion of missions) given constraints such as size, parts usage, and software programming.
- **However**, we don't just look at how well a robot performs – the Robot Performance Award based on game score takes care of that.
- Our decisions are made based on how well a team can present and explain their design and the processes, thoughts, decision-making methods, and considerations that went into their final design and code.
- The Robot Design judging session is also time for us to be sure that the kids did the work. Especially when a robot design or code is sophisticated, ask the questions that will allow you to ensure that the team understands how it all works.

Robot Design

Robot Design Judge considerations:

- The Robot Design rubric represents a set of criteria that we feel are important, analogous to evaluation criteria used when selecting between competing designs.
- Judges gather information about teams' mechanical design, programming, and overall design process, strategy, and innovation to evaluate a team and its robot.
- More complicated robots are not always better – the complication must be used for a purpose.
- Remember that this is an engineering challenge for autonomous robots. Accommodating small imperfections in the field, mission models, and environmental variations must be considered by Accomplished and Exemplary teams.

Robot Design

Changes in Robot Design Judging from previous years:

- **New this year**, from *FIRST*® Headquarters and SoCal *FIRST*® LEGO Robotics: there will **NOT** be a field table with models for mission demonstration during the Robot Design judging sessions. This change is to help focus the judging session on the processes of how the team designs & strategizes for the season.

- An OPTIONAL video clip of the team's robot running may be shown to judges on a laptop or phone. This clip may not exceed 2 minutes, and remember – Robot Design is a live judging session. Teams should still bring in their robots, code, and any documentation for the judging session.

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Robot Design

Other Robot Design considerations:

- Teams should bring a printout of their programming for the judges, or a laptop on which they can show their code.
- Our region, SoCal, does **NOT** use the Robot Design Executive Summary worksheet

Robot Design

Sensors:

- *Touch Sensor* – detects when the robot starts and/or stops touching an object or surface.
- *Color/Light Sensor* – can be used to detect a color or brightness
  Note: Using two sensors to follow a line is better than one
  Advanced teams will be able to calibrate their color sensors to account for differences in ambient lighting, or the sensors will be shielded from ambient light with bricks to remove this worry (better).
- *Rotation Sensor* – part of the motors, it detects how many rotations the axle has turned.
- *Gyro Sensor* – uses Earth's magnetic fields to determine the compass direction a robot is facing. It is notoriously finicky, but can help a robot stay on a straight path or make more precise turns.
- *Ultrasonic Sensor* – senses the distance a team's robot is away from an object directly in front of it.

Robot Design

Durability – The robot should be able to withstand the rigors of the competition. For example, it should be able to contact walls or mission models without pieces falling off or breaking. Attachments should be similarly robust. Long arms that delicately grip a lever aren't very effective if they don't stay attached to the robot.

Robot Design

Mechanical Efficiency – robot structures and attachments should show a judicious use of parts. For example, using six pins to tie two beams together is not as efficient as using one at each end.
However please note: don't over penalize the teams for adding small bits of "flair" or pieces that are fun for them to use to express their creativity. Remember the Core Value "We have fun!"

Robot Design

Mechanization – Judges look here for how the robot moves and operates. They look to see whether the robot balances speed, power, and accuracy.

Robot Design

Programming Quality – The robot's programs should work consistently, producing the same results every time. Examples of quality code could include audible checks or a simplified menu system that teams use to make sure they are running the appropriate section of code for a particular mission. Be careful to attempt to assess how the robot's programs would operate independent of mechanical faults.

Robot Design

Programming Efficiency – The goal here is to encourage teams to develop code that is modular, portable and flexible, so that it can be used in multiple situations. This criterion also addresses readability and documentation of code, both of which are good programming practices.

My Blocks are reusable chunks of code (like functions or subroutines in other programming languages) that are commonly used to make EV3 code more efficient. Be sure the team can explain how their My Blocks work.

Robot Design

Automation/Navigation –the robot should operate with minimal driver intervention. Retrieving a robot and taking a touch penalty may be part of an acceptable strategy for a team, but it is still driver intervention. In this instance, a team might have an Accomplished Mission Strategy, but only score Developing for Automation. This criterion doesn't distinguish between sensor use/feedback and mechanical feedback. It is valid for a team to use an alignment jig in base followed by a robot using the wall or a mission model to align itself before activating an attachment. It is also just as valid for a team to use a light sensor to follow a line to the same mission model. Teams should try to avoid just using driver aiming, motor rotations/dead reckoning and timing to navigate the field, as these methods often become unreliable under variations in field or environmental conditions. Remember that lack of sensors isn't necessarily a bad thing. Lack of Automation, however, should be considered.

Robot Design

Design Process – Accomplished teams move beyond a trial and error approach to robot improvements to utilize testing cycles where systematic processes are used. Frequently you will hear teams say, “We tried a lot of different things and this one was the best.” You are looking for more details and more organization to their process than that for teams who are Accomplished or Exemplary.

Good documentation of their processes in the form of drawings or photos of prototypes or previous designs and/or detailed test results, for example, can be a big help in evaluating a team’s improvement cycles.

Robot Design

Mission Strategy – Teams should have evaluated the missions on the game field and decided on a strategy for their robot design and game play. How did the team decide which order to perform the missions? How did they make decisions to support that strategy when designing the robot and programming?

Teams should be able to explain their overall goals and strategy, and what things they considered to achieve those goals. Examples may include evaluating mission difficulty vs. point value, or grouping missions with close proximity or similar attachment needs into multi-mission runs of the robot.

Robot Design

Innovation – Look for creativity, uniqueness, a cool attachment or programming trick, or something similar. Most competitions will have one or more robots that will have some feature that captures the judges' attention. Remember that Innovation implies added benefit, so make sure that the team can state the benefits of their cool feature.

Project Judging

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Project

What is the Project Award?

This award recognizes a team that excels across the Research, Innovative Solution and Presentation categories of judging. This team utilized diverse resources for their Project to help them gain a comprehensive understanding of the problem they identified, develop a creative, well-researched solution and effectively communicate their findings to judges and the community.

Project

INTO ORBITS PROJECT

This years Project assignment for the INTO ORBIT season is to

Identify a physical or social problem faced by humans during long duration space exploration within our Sun's solar system and propose a solution.

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Project

Problem and Solution

After teams select a problem, they need to find a solution to THAT problem. The goal is to design an innovative solution that solves their problem by improving something that already exists, using something that exists in a new way, or inventing something totally new. Be sure that the solution goes with their problem.

Project

Innovation Definition

In *FIRST*®LEGO® League, innovation is defined as “making life better by improving existing options, developing a new application of existing ideas, or solving the problem in a completely new way.” The main issue of subjectivity here surrounds the question “What does ‘original’ mean when it comes to innovation?”

Project

Problem Identification

Clear definition of the problem being studied

Make sure teams have identified a clear problem

Project

Sources of Information

Quality and variety of data/evidence and sources cited

Teams should list several sources of information including professionals

Project

Problem Analysis

Depth to which the problem was studied and analyzed by the team, including extent of analysis of existing solution

Project

Solution Development

Teams should tell Judges about the process used to select, develop, evaluate, test, and/or improve their solution.

Project

Solution Development

Accomplished teams also have done some type of evaluation of their solution or process to help them know their solution will work, such as evaluating research data, testing materials or design elements. **Exemplary** teams have considered implementation factors such as cost or ease of manufacturing. They have knowledge learned from their process to the design of their solution.

Project

Presentation

Sharing – The main considerations are if the team considered who might benefit from their solution, shared it with them. We encourage teams to share with a relevant audience.This requirement encourages teams to share with people they don’t know so they can become comfortable speaking about their ideas with anyone.

Project

Creativity

This criterion is probably the most subjective; creativity is different for different people. Look for presentations that stand out, are more entertaining, generate curiosity and serve to enhance the delivery of the message instead of distract from it.

Project

Presentation Effectiveness

Look for well-organized presentations that clearly deliver the message. **Exemplary** level include all three parts of the project IN their presentation (Problem, Solution, Sharing) and clear and well-organized. Teams who cover Sharing (for example) only during the question and answers in judging are still eligible for Project Awards, however their presentations are not considered as effective as teams who include all three parts.

Project

Presentation

Exemplary level have shared their solution with multiple audiences who may benefit or with multiple professionals in related fields.

Core Values

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Core Values

What is the Inspiration Award?

This award recognizes a team that excels across the Discovery, Team Spirit, and Integration categories of judging. This team conveyed a balanced emphasis on their overall FLL experience, had an enthusiastic and fun expression of team identity, and applied FLL values and skills in daily life.

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Core Values

What is the Teamwork Award?

This award recognizes a team that excels across the Effectiveness, Efficiency, and Initiative categories of judging. This team utilized diverse problem solving and decision making processes to achieve their goals, efficiently used resources relative to what their team accomplished, and took responsibility in the team's success and level of coach involvement.

Core Values

What is the Gracious Professionalism Award?

This award recognizes a team that excels across the Inclusion, Respect, and Coopertition categories of judging. This team had an appreciation for balanced contribution of all team members, acted/spoke so that others felt valued, and competed in the spirit of friendly competition while cooperating with others.

Core Values

Discovery

Teams must be able to describe how they balance all three aspects of FIRST LEGO League, especially if they really wanted to focus on only one sometimes. They should provide examples from the season about things their team discovered that were more about gaining knowledge than about gaining an advantage in the competition or winning an award. **Accomplished** teams provide multiple examples from all three aspects, while **Exemplary** teams provide more specificity- how they improved in all three aspects.

Core Values

Team Identity

The important thing to look for here are teams that are enthusiastic and spirited about their team and FIRST LEGO League. It’s not about yelling the loudest, but rather about establishing a cohesive team identity, having a good time with your team and showing a great FIRST LEGO League spirit to people outside the team. **Accomplished** teams clearly express their enjoyment in team identity, while **Exemplary** teams engage others as well.

Core Values

Impact

Look for concrete examples of how a team applies Core Values and other things learned through FIRST LEGO League to situations outside of FIRST LEGO League. **Accomplished** teams elucidate about how knowledge, skills, and values learned in FLL impacted their lives, **Exemplary** teams do this and use the aforementioned to help others as well.

Core Values

Effectiveness

No matter the approach used, a team should have a clear process to make decisions and resolve problems appropriately. Additionally, goal setting and realizing progress towards goals helps teams take ownership of their experience in FIRST LEGO League. **Accomplished** teams have clear team goals and processes while **Exemplary** teams accomplished these well-defined goals.

Core Values

Efficiency

Judges need to assess whether teams used their time, energy and other resources wisely. **Accomplished** teams know good time management / role definition allows team to avoid wasting effort OR resources. **Exemplary** teams are efficient in both.

Core Values

Kids Do the Work

This is hopefully fairly self-explanatory. It is all about how much direct involvement there is by the coach. It is allowable (actually encouraged!) for coaches to be involved. We just don't want them programming robots, performing research, dictating ideas and making decisions that the team should be making about what they are doing. **Accomplished** teams have a good balance between team responsibility and coach guidance while **Exemplary** teams exercise team independence with appropriate coach guidance.

Core Values

Respect & Inclusion

Judges must look beyond teams that show good manners and are a “nice group of kids”. We expect decent behavior to be the norm. **Accomplished** teams have clear consideration/appreciation for contributions of all team members while in **Exemplary** teams all team members’ contributions actively welcomed, recognized & included.

Core Values

Fairness & Integrity

Look for how well a team act and speak with fairness and integrity. Team competes in the spirit of friendly competition and helps others feel valued. This is clearly evident in **Accomplished** teams, however, **Exemplary** teams also encourage fairness & integrity in others.

Core Values

Coopertition

Look for ways that a team learns from, teaches, and cooperates with each other and competing teams. Determine how team members help each other and other teams, prepare for and approach potentially stressful competition experiences throughout the season. **Accomplished** teams actively learn from and teach teammates/celebrates other teams' successes while **Exemplary** teams do the same but also actively help or collaborate with other teams.

Questions?

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