FIRST® LEGO® League Coach Clinic
**WHO IS FIRST?**

**FIRST**: NATIONAL ORGANIZATION offering robotic youth events both nationally and internationally.

**FOR INSPIRATION AND RECOGNITION OF SCIENCE AND TECHNOLOGY**

Mission of **FIRST**

"To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology heroes."

Dean Kamen, Founder
What are the Progressive Programs?

4 FIRST Progressive Programs

**Junior FIRST LEGO League (Jr. FLL):**
6-8 yr olds

**FIRST LEGO League (FLL):**
9-14 yr olds

**FIRST Tech Challenge (FTC):**
junior/high school students

**FIRST Robotics Competitions (FRC):**
high school students

www.usfirst.org
3 Steps in Indiana FLL®

Team Registration: May-September

Tournament Application: October

Championship Acceptance: After QT
Step #1: Team Registration

- **Where?** Connect at the FLL website: [www.firstlegoleague.org](http://www.firstlegoleague.org)
- **When?** May through September 30 or when all FLL team spots fill
- **How?**
  - Establish an account with a password
  - At your team site you will create coach and co-coach contacts, enter a team profile, enter 2 coaches, **get screened**, pay, invite parents to complete the FLL Consent Forms (**new online process this year**)  
  - **Receive your FLL Number** which identifies your team at all tournaments
  - **Remember Your FLL Number for use throughout the season!**
  - **Order and Pay** registration fee ($225)
  - **Order materials if needed:** Challenge Field Set Up Kit ($75) and basic NXT ($435) or EV 3 robot kit ($578) if you don’t have one (LEGO Mindstorms can also be used).
Step #2: Tournament Application
(Indiana FLL Qualifying Tournaments)

- **Where?** Apply to attend a QT at: www.etcs.ipfw.edu/fll
- **When?** October 6, 7:30 AM (EDT) through October 10, 2014, 5:00 PM (EDT)
- **How?** Using your FLL team number as your login and password on the Indiana Championship FLL Website, you will be able to access the application process.

- **Identify 3 tournaments:**
  - **Select a Priority Tournament:** Choose a tournament that is your priority out of those available. *If your REAL first choice has already received a maximum number of applications, it will not be available for selection and you will have to identify another tournament as your priority.
  
  - **Select two(2) Alternates:** Select two tournaments as your first alternate and second alternate. *If your Priority selection was not your REAL first choice, you can identify your REAL first choice as first alternate just in case it should develop openings for any number of reasons.*

- **Application Submission:** Submit online a completed application form and you will then receive a printable copy of the information you submitted. WAIT UNTIL YOU ARE CONFIRMED INTO A TOURNAMENT. Once confirmed into a tournament, you can enter your team information with any corrections into the specific tournament form you submit with payment.

- **Email Tournament Confirmation:** Coaches will be contacted with an Email Tournament Confirmation sometime during the five business days AFTER the closing of Tournament Application Week. *NOTE that the Indiana State Committee reserves the right to confirm teams into any of their three tournament choices if needed to accommodate all teams and tournaments in the state.*
Step 3: Championship Acceptance
(must be selected to advance)

Where? Championship Packet: Advancing teams receive a packet at their QT with directions on where to go online to accept their spot at the Indiana Championship.

When? Your team must be selected as an advancing team from an official Indiana QT to attend the Championship. A coach must accept their team’s spot at the Championship by the Monday after their qualifying tournament.

How? Acceptance is done online through a link provided in the Championship packet given at the QT.

Special Note: QT Location: The same percentage of teams advance from each tournament so that attending a small (12-16 teams), mid-size (20-28 teams), or large (32-36 teams) tournament doesn’t matter as the actual number of teams advancing will correlate to the number of teams that attend a tournament.
2014 FLL® Challenge Theme

The World Class Challenge is a PDF file that contains project definition, and robot game rules, and robot missions definitions. You will want to print it out and refer to it often. It can be located at the national website under 2014 Challenge
What do FLL teams do?
FIRST® LEGO® LEAGUE
has Three Components
The **FLL® Challenge**!

- **2014 FLL Challenge Theme**: *World Class* impacts **ALL** components of the competition.

- **FLL Robot Game**: Teams design, build, and program a robot using all LEGO parts.

- **The Project**: Teams explore & focus on a problem and potential solution associated with the theme.

- **The FLL Core Values**: Teams learn about and apply the FLL Core Values as their guiding principles when they function as a team and prepare for a tournament.
Teamwork
Good Sportsmanship
Cooperation + Competition= Coopertition
Respect
Team Spirit
Gracious Professionalism®
FLL® Core Values

• 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!
FLL Core Values
Judging

• The Core Values should be learned by the team

• 3 components: Inspiration, Teamwork, Gracious Professionalism*

• Time for Judging: 10 min. for entire judging session
  - Option at a tournament: CV activity (usually 3-4 minutes)
  - Tournaments will use a CV poster (no more than 2-3 minutes to describe the poster).
  - Judge questions and discussion with the team (remaining time)

• Judging room: 2 judges

• Rubric: See Coach Handbook: See rubric as a guide

• *Gracious Professionalism (see pg. 28 Coach Guide): Teams compete like crazy but appreciate and treat each other (and other teams) with respect.
Coaching Tips: Core Values

Discuss each Core Value and what they mean to each child: allow team members to share their ideas and have everyone listen respectfully.

Emphasize the use of the FLL Core Values and Gracious Professionalism often during team meetings.

Discuss what FIRST stands for: For Inspiration and Recognition of Science and Technology.

Document the season with a camera or activity log. A poster will be used at both Qualifying and Championship Level Tournaments.

Do some team building activities such as:
  Making a team banner; small trading items; write a team cheer; communication games such as the magic carpet, so that the team needs to talk to each other to complete a task. Many ideas can be found on the internet.

Remind the students that they will have to communicate to the judges how the team accomplished their goals during the season.
Explore Real World Problems
Research the Challenge Topic
Identify a Problem
Develop Innovative Solutions
Share Your Findings
Project Presentation

- The project is based on the Challenge Theme: Nature’s Fury
- 3 components: Problem *(Question for 2014)*, Solution, Sharing

- **Time for Judging:** 5 min. (includes set up and present); 4-5 min. questions

- **Judging room:** 2 judges; ask tournament director about equipment provided

- **Creative presentation:**
  - brainstorm ideas of how you to present in a memorable way to the judges;
  - use all team members in the presentation, think about roles each person plays,
  - keep organization on the 3 required parts of the presentation;
  - create an outline or script for everyone and practice many times

- **Rubric:** See Coach Handbook: See Rubric as your guide to cover all areas
2014 Project
Topic Choice & Question

Problem (2014 Topic and Question)

- Usually there is a problem to focus on. This year, your team is asked to make an improvement in the learning process. They must first choose a topic to focus on of their choice. Then write a question that is in the form of: “How could we improve the way that someone learns [your team’s topic]?”

- Explore how people learn about the topic your team chose. Make sure to include the question in the presentation so judges clearly know what you are focusing on. Why did your team select this topic as your focus? You can include that in the presentation. *See identify a question worksheet.

- Find and track sources; analyze what was learned about how people learn this topic; teach team to record sources/include them in the presentation someplace. Show them how to do that and see if they can do it on their own.
Determine a solution your team wants to focus on about improving the way people learn about the topic your team chose

- Why did you choose this solution? How does it actually work? Why is it a good solution?
- FLL WORLD CLASS Question – a solution that adds value to society by improving something that already exists, using something that exists in a new way, or inventing something totally new.
- How can it be implemented to really work? (be very clear)

Share your ideas with someone outside your team

- Tell judges about sharing

Reminders and Resources

*MUST DO ALL 3 COMPONENTS AT AN EVENT TO BE CONSIDERED FOR AN AWARD.*

*Include everyone in the presentation; not just some members of the team.

*Resources: Check out the World Class Topic Guide with helpful links and ideas about exploring this year’s topic. It can be found on the 2014 Challenge web page: [http://www.firstlegoleague.org/challenge/2014fllworldclass](http://www.firstlegoleague.org/challenge/2014fllworldclass)*
Coaching Tips: Project

• **Brainstorm with the kids** what they want to tackle as a qualifying project and decide/vote with the kids as to practical/ doable project (see Brainstorm List as a tool).

• **Make sure the team knows they must present their question/topic and solution to the community** in some form. **LET PARENTS KNOW.** This is called “sharing” in the Coach Guide.

• Project presentation includes set up so make sure they use the 5 minutes effectively (practice the set up also).

• **Practice, practice, and practice** the final project presentation. Allow time for the team to come together as a team to present their project while at the meetings.

• **Keep them focused; set team goals, keep them visible, and check them off as you get them done.**

• **Remember, you are the coach who needs to control the process not the content,** but allow the kids to be productive.
Design, Build & Program Autonomous Robots
Use LEGO Mindstorms, NXT, NXT-G, or EV 3 software.
Test, Learn and Improve
Problem Solve and Critical Thinking
Compete at the tournament on a field of competition: a 4’ X 8’ table top with wood edges holding an FLL Field Kit (a mat & Lego structures designed around the theme that the team builds)
Robot Game

- **Field Kit:** based on theme of World Class theme for 2014
  - Build the structures and place them correctly on the mat.
  - The mat can be placed on a surface that is 93” X 45”:
  - See table instructions in the Robot Game document found at FLL website
  - alternative: use floor and build wood parameters

- **Build the robot:** design, build robot around NXT or EV 3“brick” using all LEGO parts

- **Program the robot:** LEGO Mindstorms, NXT, or EV 3 software.

- **How does strategy and Engineering Design Process play a role?** Consider the link between robot design, programming, the tasks for each mission, your strategy (this may change as the season progresses and your team tests each idea) Guide them in the process of building, testing, re-building for maximum consistency and success.
Robot Game
continued

• **Tournament Scoring:**
  – Learn and explain what the referees do at a tournament
  – Examine the score sheet as a team (score yourself) see sample score sheet
  – Learn what is allowed at the game “table”
  – Check allowable parts. **Read rules!**

• **Scoring/Awards/Advancement Requirements:**
  – 3 rounds to run your robot; keep the best score
  – Best score out of three at tournament wins robot performance;
  – Standard rule for advancement: must be in top 40% of team scores. Any variation in this will be announced prior to tournament by the tournament director.

• **Review the robot game rules and the current year’s missions;** make sure to check the Robot Game updates on the FLL website for changes

• **Strategy:** choose which tasks you will do, what order, how you can best maximize your score with your team’s skills
Robot Design
Judging

• **Judging Procedures:** No formal presentation is required; but most teams prepare something to explain the following:

  **USE THE 3-S APPROACH**

  • **Show off robot:** Demonstrate the best strategies/tasks; demonstrate and explain unique qualities; demonstrate & explain durability & consistency
  
  • **Share Information:** *Always explain* the approaches (both with robot design and programming) the team used to achieve missions and your use of the tools of robotics: ex. loops, sensors, and attachments. Share stories or examples of team learning and decision making: how you achieved strength, accuracy, durability and why you chose a certain strategy (how did you come up with the idea?)
  
  • **Samples:** Provide samples of how the team programmed the robot and samples that illustrate how your team understands the link between design and programming.

**Make sure when judge’s ask questions that everyone participates in some way even if they were not in charge of the programming.**
Coaching Tips: Robot

• **Directions to build a table** if you choose to do so can be located in the Challenge Guide and on line at the national website:  
  http://www.firstlegoleague.org/challenge/2014fllworldclass

• **Keep up with the Project and Robot Game Updates**. These are additional rulings that have been clarified further due to questions that have been asked by coaches, teams and referees. They can be located at the national website. 

  Make use of online resources!

• Model Building Instructions:  
  http://www.firstlegoleague.org/challenge/missionmodelbuildinginstructions

• Resources: video summary of the game this year featuring Scott Evans:  
  http://www.youtube.com/watch?v=po9j6vpuW7A&feature=youtu.be

• Overhead view of the field:  
  http://www.firstlegoleague.org/sites/default/files/Challenge/FLL_WORLD_CLASS/WorldClass_Table2.jpg

• On line mission tester: use of timing and scoring  
  http://www.firstlegoleague.org/sites/default/files/Challenge/FLL_WORLD_CLASS/world_class_scoring.html
Summary of the Team Preparation Process

The Robot Game:
- Build Lego Field Kit
- Construct Robot
- Read rules & yearly missions
- Program robot for missions
- Practice Missions
- Review Robot Game Updates
- Test and ask questions

The Project
- Research the topic
- Read guidelines
- Problem Solve
- Share Solutions
- Creative Expression

FLL Core Values:
- Team Work: Team Name & Team Spirit
- Strategies for working together
- Learn the FLL Core Values
What happens at FLL® Tournaments?

Robot Rounds
on a Themed Playing Field

Visible to the public

Judging
Robot Design, Project, FLL Core Values

Not visible to the public.
The Format for *FLL®* Tournaments?

**Schedule:** Teams rotate throughout the day between various locations at a tournament.

**Judging Areas:** Usually teams only

**Practice Table or area**

**The “Pit”:** Or where teams hang out

**Robot Game Competition:** Just like a sporting event
**FIRST LEGO® LEAGUE:**
What teams do at a tournament=FUN!!

Demonstrate Robotic Skill:
- Robot missions
- Best score of 3 rounds
- 2 ½ minutes/robot run

Present to Judges:
- Robot Design
- Project Presentation
- FLL Core Values

Receive Recognition & Awards

Show team spirit!
General Coaching Tips

Create a Personal Schedule

Include days/times/other commitments for the team

Be honest with yourself. Do not promise what you can’t deliver

Many teams will eventually meet 5 to 10 hours each week for the team to be successful as you get closer to the tournament depending on your availability.

Plan the Meeting Time Schedule/Agenda

Emphasis attendance and being on time for the team to succeed.

Set Realistic Team Goals

Discuss with the team what they want personally from a season of FLL. Remember that it is not just about winning all the awards, its about the community, doing something you have never done before, taking on new and interesting challenges, and having fun and making new friends along the way.
General Coaching Tips

Name the Team
The name provides a sense of identity and belonging and will also help each team member to do their best each for/with the team.

Create a Team Logo
Ask if they want to design a logo to go with the team name. If they do, assign for homework to those interested in doing the artwork. Let them know they can have help if they need it.

Dealing with Larger Teams
• Break them up into smaller working groups
• Make groups task orientated during each meeting.
• Remix the working groups as often as you can to everyone to learn about and participate in all aspects of the challenge and presentations.
Final Advice
K.I.S.S. – Keep Things Simple Silly

Remember the coaches’ job is to keep the team on schedule: You, the coach, must control the entire process, but not the content.

Set realistic goals for each meeting with the team and be there to keep them moving in a positive direction.

Whether it’s the project, the robot, or even your team name, if you keep it simple, more tasks will be able to be completed. The team will also be able to do a higher quality job on each task and be proud of themselves for what they have accomplished.

Goals for a FLL team during a season:

  - We did something we didn’t think we could do.
  - We helped our community.
  - For returning teams, we improved over last year

Finally, we made great new friends and **HAD FUN**
Indiana FLL® Championship Tournament

Winners Advance to
International Events

2013 INDIANA CHAMPIONSHIP
DIRECTOR’S AWARD:
YETI
From Granger, IN at National Open Tournament in California

FLL Team Progression:
Qualifying Tournament … MAY advance
to Championship Tournament…MAY advance to International or National Open or World Festival
FLL® Resources

Resources:

– National website: www.usfirst.org
– Indiana Championship and Qualifying Tournament websites for some tournaments. Indiana Championship: www.etcs.ipfw.edu/fll
– 2014 Challenge on the FLL website (see throughout this power point)
– Other resources: www.techbrick.com
– Coaches handbook, building instructions for FLL Field Kit, rubrics, robot game scoring sheets to use as a guide
– Ability to ask questions about Robot Game: FLL Robot Game Updates
– Ability to ask questions about the project: FLL Project Updates
– FLL Team Webinars to help start and improve your team
– Ongoing FLL Team Blasts from FIRST and Indiana Team Updates
– Coach Clinics or other training for coaches and teams held around the state
Don’t forget to check out....

National website: www.usfirst.org

Apply for a tournament during the application week in October at the:

Indiana website: www.etcs.ipfw.edu/fll
Who to contact for help:
- Your Indiana Operational Partner: Carol Dostal dostalc@ipfw.edu
- Your Qualifying Tournament Director (see IPFW Indiana website for contact information)
- FLL Coach Clinic Consultant: Kitty Bellis: kittyfwin@gmail.com

Where to get information:
- National Websites and your Championship website: www.usfirst.org
  www.etcs.ipfw.edu/fll