FLL - New Coach Training

## Project, Robot Game & Core Values

Who's Who

- ## FIRST
  - **A GLOBAL ROBOTICS COMMUNITY PREPARING YOUNG PEOPLE FOR THE FUTURE**

- ## FIRST Mid-Atlantic
  - Local 501(c)(3) non-profit licensed to run FIRST program in the New Jersey, Delaware and Eastern Pennsylvania

- ## FMA-FLL
  - FIRST Lego League program run by FIRST Mid-Atlantic (PA-East/NJ-North FLL Regions)
  - Frank Larkin – FLL Director flarkin@midatlanticrobotics.org
 - Ernie DiCicco – NJ-North Regional Director edicicco@firstpartners.org
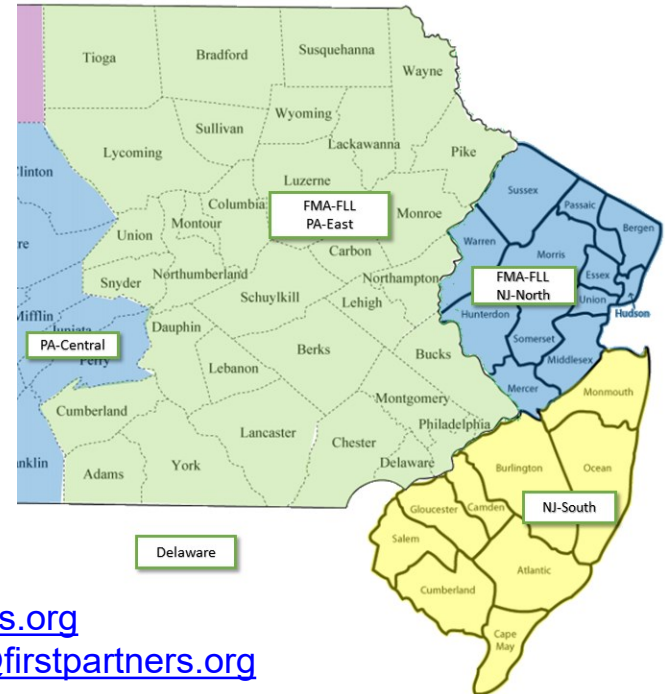
FMA-FLL Team Info

- FIRST Mid-Atlantic Website
  [FLL Challenge Team Info](#) gathers resources from around the Web.

- ✓ Coaches Required Reading
- ✓ Team Required Docs.
- ✓ FAM-FLL Participation and Registration
- ✓ Storing Your Challenge Table Pieces
- ✓ Coach Training
- ✓ FLL Project
- ✓ MAR Challenge Tools
- ✓ Spike Prime

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Table Missions   Submerged
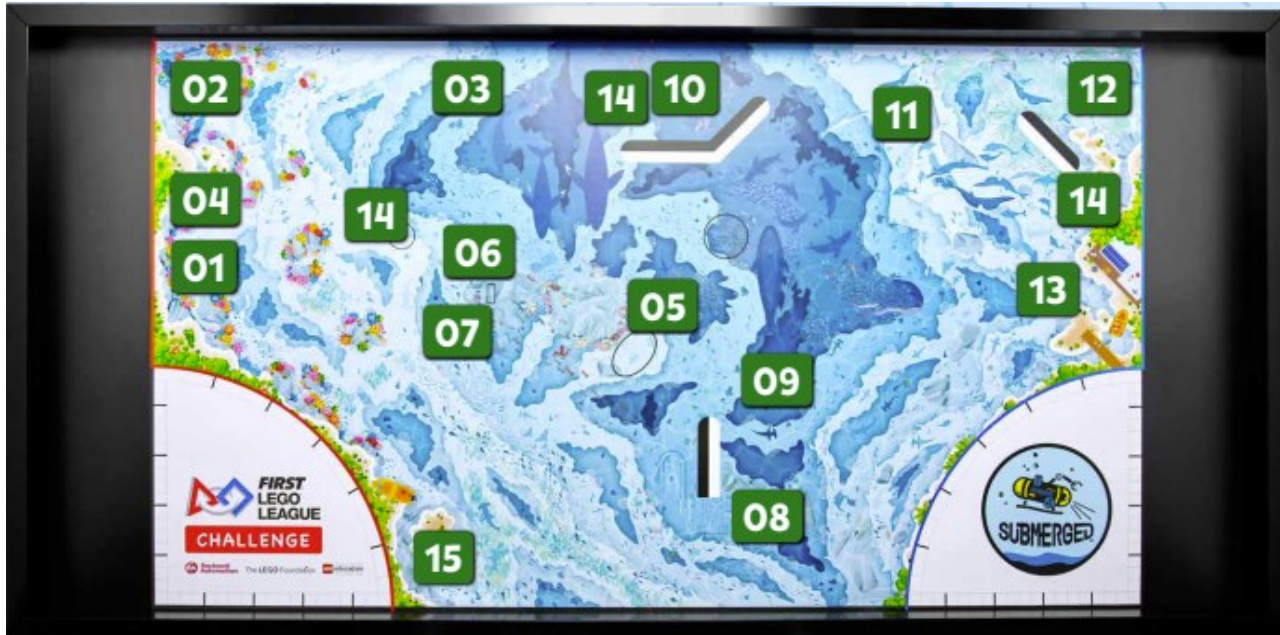
Consolidated Information

Single Launch Point for all information:
https://www.firstlegoleague.org/season
- ✓ Various Challenge Videos
- ✓ Rubrics help the judges deliberate for awards and provide feedback to teams
- ✓ Awards depend on the tournament size.
- ✓ Mission Model Building Instructions
- ✓ Judging Session Workflow
- ✓ Participation Rules
- ✓ Robot Game Rulebook
- ✓ Table Build Instructions
- ✓ Challenge Updates (Very important)
- ✓ Think Space Instructions


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Consolidated Judging Process

- Started in the 2019 season
  - Minimum of 3 judges in the Judging room.
  - Additional judges can be added, always nice to have more.
    - We use this to train new judges.
- No experts. All judges have the same sway on the outcome.
- Judging information available on [FLL Season Page](). Under Challenge Judging. (includes Rubrics, Flow Chart, and Awards)
  - Several changes in 2024 Judging
- Judges are looking to see if teams understand what they are presenting. Not at a college level but at a level to tell others about it.

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Project Judging

- Solving real world problems
- Field Trip and Expert Research
- Community
- Solution
- Presenting to judges
  - Present for 5 Minutes
  - Q&A for 5 minutes

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PROJECT

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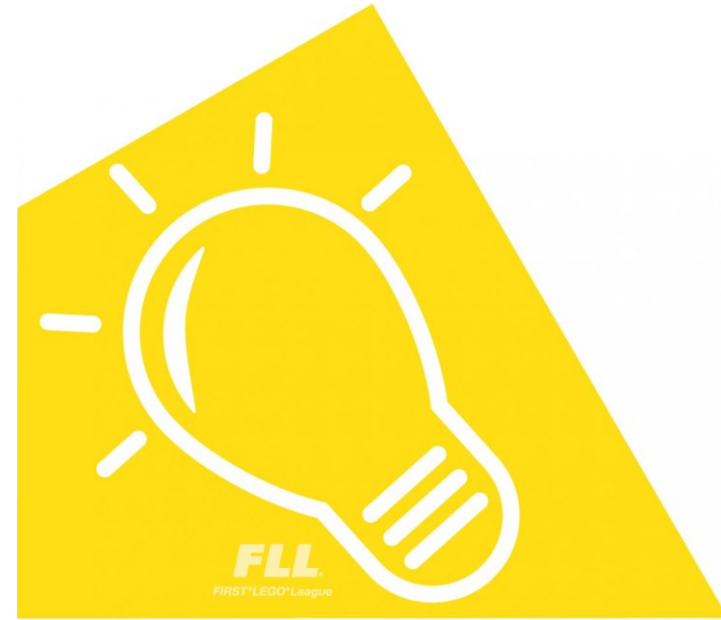
Solving Real World Problems

- Teams research a real-world problem in the field of this season's Challenge theme
- Create an innovative solution to that problem
- Problem often is personal to the team or to a team member
- Some teams go as far as creating a product.

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Field Trip and Expert Research

- Plan field trips that fit the Challenge
- Organize so that professionals on the field trip can speak to students
- Great team-building activity
- Encourage students to ask questions and start thinking about problems and solutions

Community

- Reach out to local businesses, universities, and organizations
- Contact relevant professionals
- Have students consider needs of their community
- Organize having a professional come and speak with students
- Teamwork and a sense of community are necessary!

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Submerged Project – Focus

- ## Team Meeting Guide - Page 4
  "This season, children will learn about how and why people explore the oceans. Our discoveries beneath the ocean surface teach us how this complex ecosystem supports a healthy future for the plants and animals that live there."

- ## [Submerged Challenge Overview](#) – Page 3
  START → This season, your challenge is to dive into a problem faced by people who explore the oceans.

  Problem → Conduct research to explore existing solutions to the problem and to determine what challenges are still faced. You may even find that your ideas about exploring the oceans lead you to solutions applicable to life on land.

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Solution

- Steps of Project:
  1. Identify a <u>Real-World Problem</u>
  2. Learn from experts
  3. Create an Innovative Solution
  4. Share Your Research and Solution
- Share with audiences that can benefit from the solution
- Consider getting a patent.
- Don't necessarily reinvent the wheel. The project should be:
  - Realistic, scalable, and supported by R&D
- Build on other ideas & solutions.

Presenting to Judges

- Refer to [FMA-FLL Challenge Team Info Pages](#)
- Presentation: (5 minutes) (must be live, no videos)
  - Must show judges that all three steps of the Project were completed
  - Must show the project was relevant to the season's challenge
  - Try not to run over 5 minutes or judges may interrupt
- Judges Q&A: (5 minutes)
  - Judges want to hear about the process!
  - Want to hear about the potential of the solution and what is needed to make it a reality
  - If possible want to hear from all students.

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Innovative Solutions Award

- Separate FLL Region-wide award given to a team judged to have the most innovative solution.

- Teams at qualifiers will be judged if their solution is worthy to move on to FMA-FLL Champs as ISA nominee.

- At FMA-FLL Region Champs the top solutions will be rejudged for ISA. The top solution will be sent to FMA-FRC Championships (April) to go against teams from all FMA regions, PA-East, NJ-North, NJ-South, and Delaware. To be crowned FIRST Mid-Atlantic ISA Champion.

- More Info to come…

Robot Development Tips

- Consistency will be your biggest problem. It will work "sometimes" at home. It will likely NOT work on the competition field.
  - Find out how to detect lines, "Use the sensors, Luke!!!!"
  - Use fixed assets on the field (walls, field elements) to straighten or orient robot.
  - A robust robot is more stable and more reliable
- Know how the field is placed within a table. Distance between the field mat on the table walls is NOT required to be a fixed distance.
- Use the Mat lines to line your robot's starting point!
- Make field setup the students' responsibility including where the elements are supposed to be and any problems on the field before the round starts.
- Introduce variables during practice
  - Bumpy mats
  - Lighting challenges (flashlights, different bulbs)
  - Bumpy walls

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Robot Programming

- [FLL Challenge Programming (wiki)](#)
- [Spike Prime Word Blocks (Scratch)](#)
  Spike Prime Python

- [LEGO Mindstorms EV3](#)
- [LEGO Mindstorms NXT (wiki)](#)

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Robot Programming

- New MAR FLL Challenge Programming Tools
  - Google Slides Presentation
  - Suite of Spike and EV3 My Blocks Available
  - All available on GitHub [FLL Gyro and Line Follow My Blocks](#)
    - Spike 3.0 version out, new 2024 version coming soon…
  - Discussion on Weekly "Lets Be Frank"
    - Wednesdays at 7:30PM, see Calendar for details

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Robot Design Judging

- You can bring Robot and Computer (battery power)
  - No competition table in the judging room!!
- Robot Presentation: (5 minutes)
  - Prepare to discuss the robot and the design process.
- Judging Q&A: (5 minutes)
  - Mechanical Design, Programming, Strategy, and Innovation

Robot Judging - Sample Questions

Important: Judges want to see if students understand what they are doing.

- Explain how the robot moves around the board and describe how the parts work together to make it move.
- How many attachments did your team build for your robot?
- How many and what type of sensors does your robot use?
- Did you program the robot using EV3/Spike (software with kit)?
- How many programs are stored in the EV3/Spike robot?
- How consistent are the programs (always successful, mostly successful, sometimes successful)
- How many missions can your robot attempt to complete?
- Are there any features of your robot that you feel are special, different, or clever?
- Explain the solution of your favorite mission showing the judges the program and pointing out any specific attachments your robot uses to complete this mission.

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Robot Design Judging

Knowing vs Understanding

- Student: Our Robot uses the passive attachments
- Judge: How does that work?
- Student: (Knowing): They make it easy to score points.
- Student: (Understanding): They are mechanical solutions designed for a specific mission. They have Legos in specific locations to score points on the mission they are used on. Show a live example of one.

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Robot Design Judging

Knowing vs Understanding

- Student: Our Robot uses the gyro to navigate
- Judge: How does that work?
- Student: (Knowing): It knows what angle we are pointed.
- Student: (Understanding): It gives us the angle we are pointed. We use math to change the power on the wheels to move the robot back to the desired angle as we move.

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Robot Design Judging

Answering

- Keep answers short but show that students ***understand*** vs. just have ***knowledge*** of the topic.
- Do not go into a long technical explanation of how this works on an electronic or mechanical level.
- If too detailed judges may stop you and ask….
  - What does this device or sensor give you and how do you use it in your program?
  - Short detailed answers show ***understanding***.
  - Short answers allow more time for questions.

Robot Design Judging

- **What if students do not know an answer?**
  - Do not panic! Do not feel bad. New to some students.
  - Do not try the make stuff up in the answer.
  - Simply say "I do not know." or "That is all I know."
  - This will leave more time for questions they or others can answer.
  - If another person is the team expert on a topic, have the students graciously and professionally throw to them.
- Judges are not trying to trip anyone up. We want all to succeed and feel good about what they did.

Core Values Judging

- The Core Values
- Gracious Professionalism
- Coopertition
- Core Values judged as part of the Project and Design Presentations
(new in 2024)

FIRST Core Values

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

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

Gracious Professionalism ™
"It's a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community."

The Core:
Gracious **P**rofessionalism®

- Respect for the feelings, opinions, and culture of others.

- Respect for equipment.

- Good sportsmanship.

- Being friendly and polite at all times to all persons.

The Good, well just OK (they are kids)
- Fun physical pushing, shoving, or other kid behaviors
- Tossing LEGO's to each other
- Allow team members to make mistakes and learn. We all make mistakes!!!!

The Bad
- Laughing at others mistakes
- Making negative comments about other teams, robots, shirts, mascots, etc.
- Touching other teams' robots without their permission.

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Coopertition®

- Cooperation and Competition
- Once you have mastered a skill, you teach it to someone else so that everyone can do better next time.
- Example: Sharing a spare part or battery charger with another team so they have a chance to compete

Questions?

More Info at…
[FLL Challenge Team Info](#)