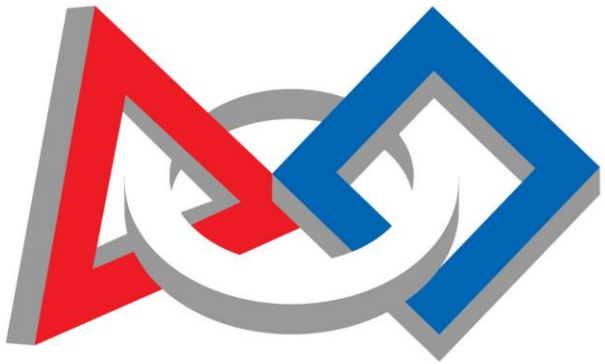


FIRST® LEGO® LEAGUE CHALLENGE

Coaches' Training: Beginners Class

Elaine Todd

elaine@aktodds.com

907-441-5924

FLL team #207 BrickMasters (Retired)
Facebook: www.facebook.com/BrickMastersAK
brickmasters@aktodds.com

FTC team #5223 The JABOTs
jabots@aktodds.com
jabots.org
Facebook: JABOTs FTC team 5223

AOF Robotics

AOF Robotics is a nonprofit corporation with the goal of promoting interest in and knowledge of science, technology, engineering, and math (STEM) in order to develop leadership, business, teamwork, communication, and other life skills. This is accomplished by providing youth with the opportunities to design, build, and program robots.

Website: www.aofrobotics.com Tax ID 47-4533337 aof_robotics@aktodds.com

Why oh why participate in *FIRST*® robotics? Because it's about more than robots! Kids will learn…

Programming
Troubleshooting
Problem-solving
Critical thinking
Teamwork
Public speaking
Researching
Career options
Interacting with adults
How to take turns when speaking
Networking
Volunteering
Giving back
Sharing
Deadlines
Mentoring
Cooperation
Dealing with stress
Communicating

Documentation
Speech writing
Working on a team
Conflict resolution
Time management
Presentation skills
Patience
Perseverance
Structural design
Real-life math
Real-life science
Thinking outside the box
Engineering process
PC-based tools such as Microsoft Office
Mac-based tools such as Apple Pages
Cloud-based tools such as Google
Wiring
Flowcharting
Pseudo code

Web design
Photography
Creative thinking
Gracious competitors
Corporate image
Logo design
Engineering notebook
Goal setting
Risk assessment
Revisiting and adjusting goals
Project management
Video editing
Team spirit
Role definition
Team spirit
Publishing

Today's AGENDA

- *FIRST®*
- FLL Challenge
  - Teams
  - The Challenge (general info)
  - Season
  - Registration
  - Budget
  - Meetings
  - Tournaments
- THE CHALLENGE (detailed info)
  - ➢ CORE VALUES
  - ➢ PROJECT
  - ➢ ROBOT GAME
- RESOURCES:
  - ➢ Team Meeting Guide
  - ➢ Robot Game Rulebook
  - ➢ Engineering Notebook


DON’T
PANIC!!

First, a little background information about

FIRST®

FIRST®

- **F**or **I**nspiration and **R**ecognition of **S**cience and **T**echnology
- 501(c)(3) not-for-profit public charity
- Founded in 1989 by Dean Kamen
  - prolific inventor and entrepreneur
  - holds more than 1000 U.S. and foreign patents
  - inventor of the Segway
  - awarded many science and engineering awards

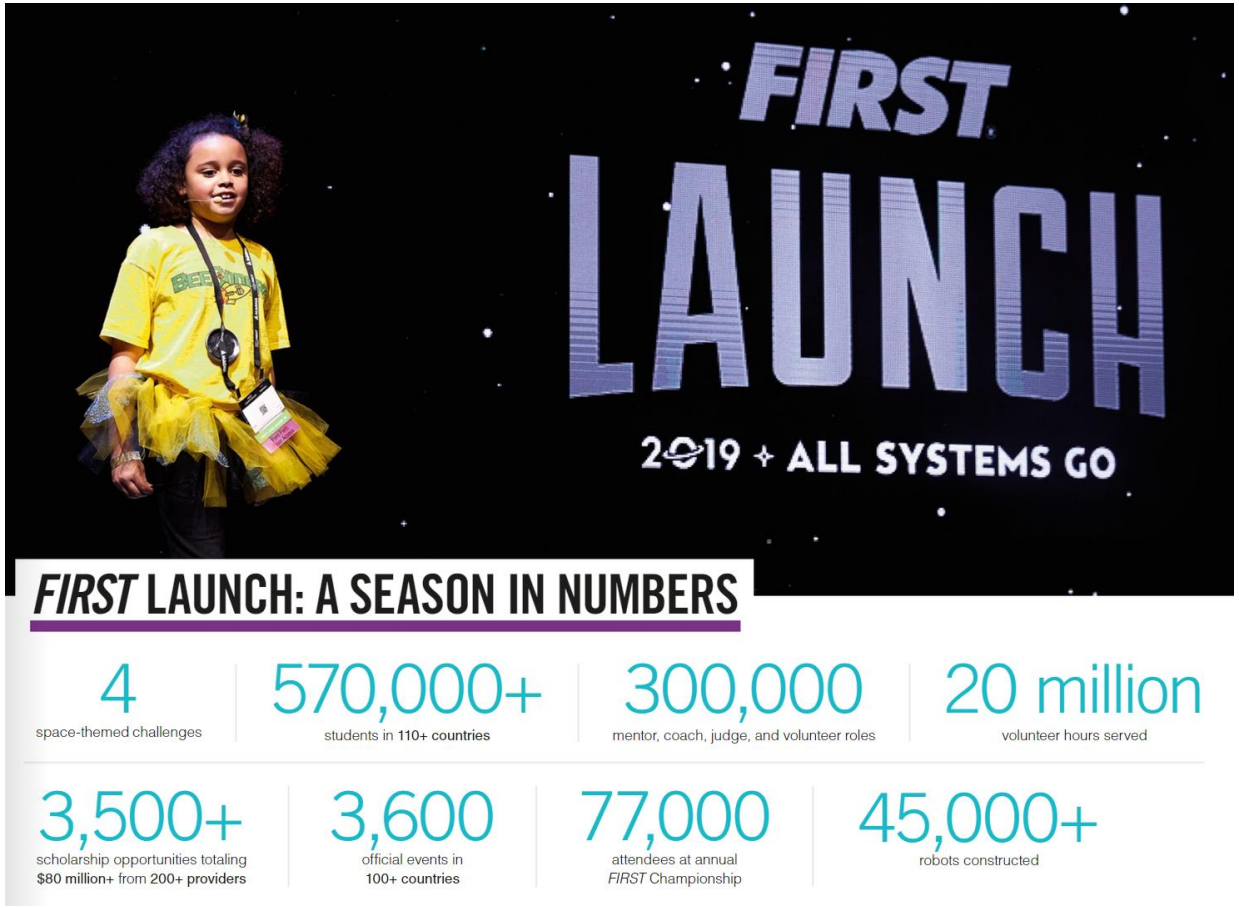
To learn more about Dean Kamen:
- **https://en.wikipedia.org/wiki/Dean_Kamen**
- **Watch the movie Slingshot on Netflix**
- **Search for his TED talks**

FIRST® Vision

“to transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology leaders.”

- Dean Kamen, Founder *FIRST®*

- First ***FIRST®*** robotics competition took place in 1992 in a small New Hampshire high school gym and involved only 28 teams



It's the Hardest Fun You'll Ever Have!

FIRST® Tech Challenge for Grades 7-12 (ages 12 to 18)

FIRST® Robotics Competition for Grades 9-12 (ages 14 to 18)

FIRST LEGO LEAGUE DISCOVER

GRADES PreK-1

For children ages 4-6, this playful introductory STEM program ignites their natural curiosity and builds their habits of learning with hands-on activities in the classroom and at home using LEGO® DUPLO® bricks.

FIRST LEGO LEAGUE EXPLORE

GRADES 2-4

In Explore, teams of students ages 6-10 focus on the fundamentals of engineering as they explore real-world problems, learn to design, and code and create unique solutions made with LEGO bricks and powered by LEGO® Education WeDo 2.0.

FIRST LEGO LEAGUE CHALLENGE

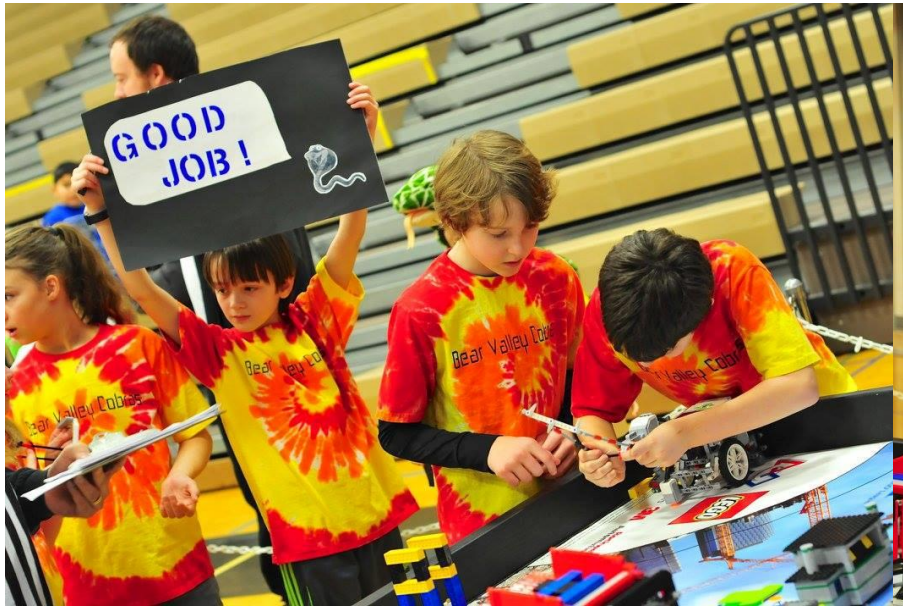
GRADES 4-8

Friendly competition is at the heart of Challenge, as teams of students ages 9-16* engage in research, problem-solving, coding, and engineering - building and programming a LEGO robot that navigates the missions of a robot game.

*ages and grades vary by country

Now let's focus on

FIRST LEGO LEAGUE CHALLENGE



FIRST LEGO LEAGUE CHALLENGE

Teams

- Grades 4 to 8
- Ages 9-14* in US, Canada and Mexico (up to 16 in other countries)
- Maximum 10 members per team
- Two adult coaches/mentors minimum
- Adults may coach multiple teams
- Teams can be school-based or community-based
- Kids in grades 7 and 8 may participate in both FLL Challenge and FTC, but can only be members of one FLL team and/or one FTC team (a student cannot be on 2 FLL Challenge teams)

*Team members must not exceed the maximum age on January 1 of the year the Challenge is released.

FIRST LEGO LEAGUE CHALLENGE

Challenge

- Addresses a real-world scientific problem
- 3 parts:
  - Core Values
  - Innovation Project
  - Robot Game
- Released in late August
  - firstinspires.org for details
  - YouTube videos give great overview
  - challenge updates are uploaded often, usually on Friday afternoons

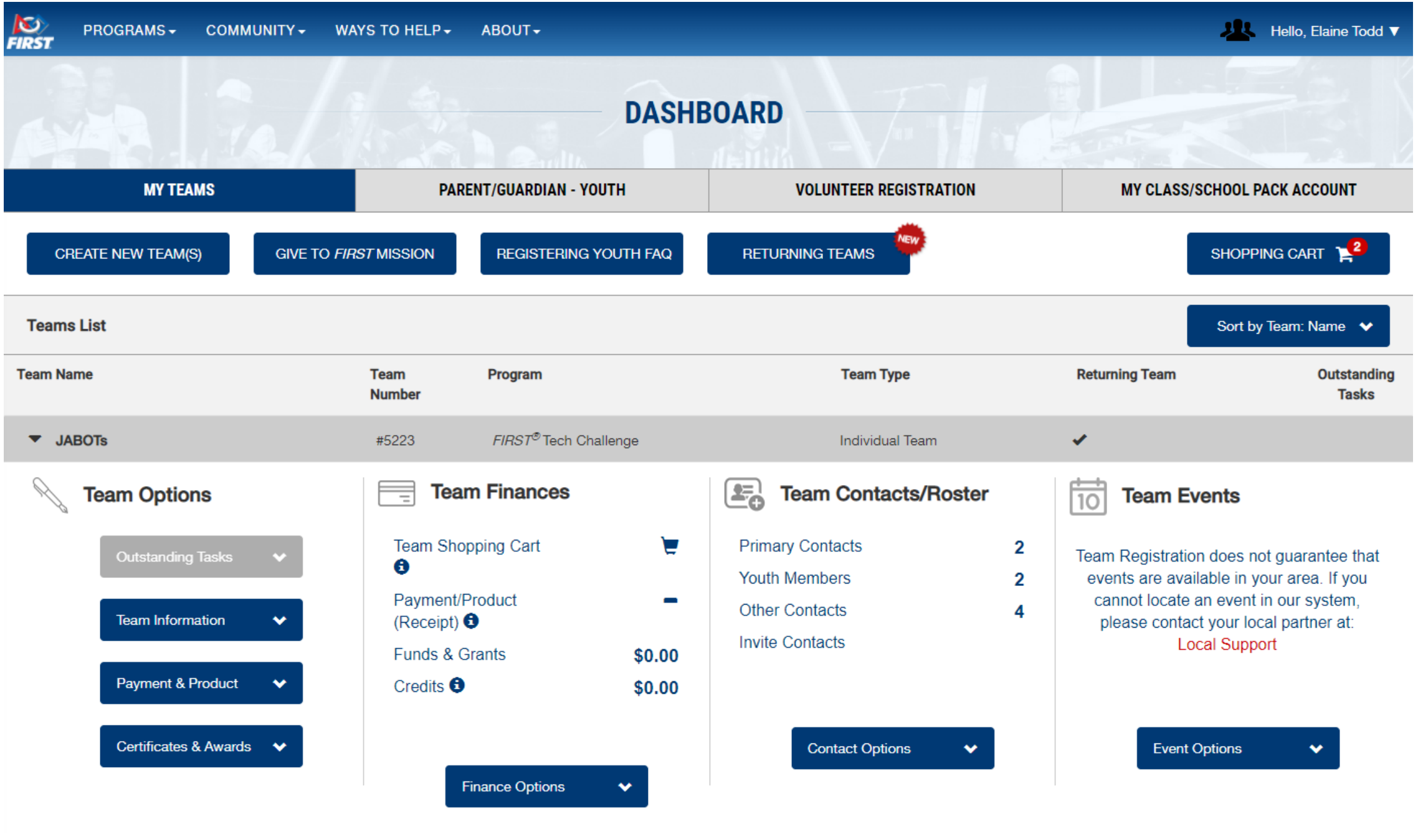
FIRST LEGO LEAGUE CHALLENGE

Season

- May — Registration opens
- August — New challenge is released
- Dec/Jan — To qualify for the AK state tournament, teams must be awarded one of many trophies awarded at a qualifying event. Teams can compete in multiple qualifiers but need only qualify once.
- January — If your team does not win a trophy at a qualifying event, fill out a Core Values application
- January — AK state tournaments (unknown this year due to COVID)
- Mar/Apr — State winners go on to represent Alaska at FIRST events all over the world! (July/Aug 2021 due to COVID)

Registration

- Open from beginning of May to late September (ish)
- Create an account at www.firstinspires.org
- Once two coaches have completed Consent & Release and Youth Protection Program requirements, you will be able to pay for registration
- From Manage Team Contacts/Roster
  - invite parents/guardians of team members
  - Print team roster for tournaments
- From Order Product
  - You will be transferred to Lego Education portal
  - Create a Lego Education account
  - Order EV3 or SPIKE Prime parts/kits
  - Order Challenge Set


PROGRAMS
COMMUNITY
WAYS TO HELP
ABOUT
Hello, Elaine Todd
DASHBOARD
MY TEAMS
PARENT/GUARDIAN - YOUTH
VOLUNTEER REGISTRATION
MY CLASS/SCHOOL PACK ACCOUNT
CREATE NEW TEAM(S)
GIVE TO FIRST MISSION
REGISTERING YOUTH FAQ
RETURNING TEAMS
NEW
SHOPPING CART
2
Teams List
Sort by Team: Name
Team Name
Team Number
Program
Team Type
Returning Team
Outstanding Tasks
JABOTs
#5223
FIRST® Tech Challenge
Individual Team
Team Options
Outstanding Tasks
Team Information
Payment & Product
Certificates & Awards
Team Finances
Team Shopping Cart
Payment/Product (Receipt)
Funds & Grants
$0.00
Credits
$0.00
Finance Options
Team Contacts/Roster
Primary Contacts
2
Youth Members
2
Other Contacts
4
Invite Contacts
Contact Options
Team Events
Team Registration does not guarantee that events are available in your area. If you cannot locate an event in our system, please contact your local partner at:
Local Support
Event Options

Budget

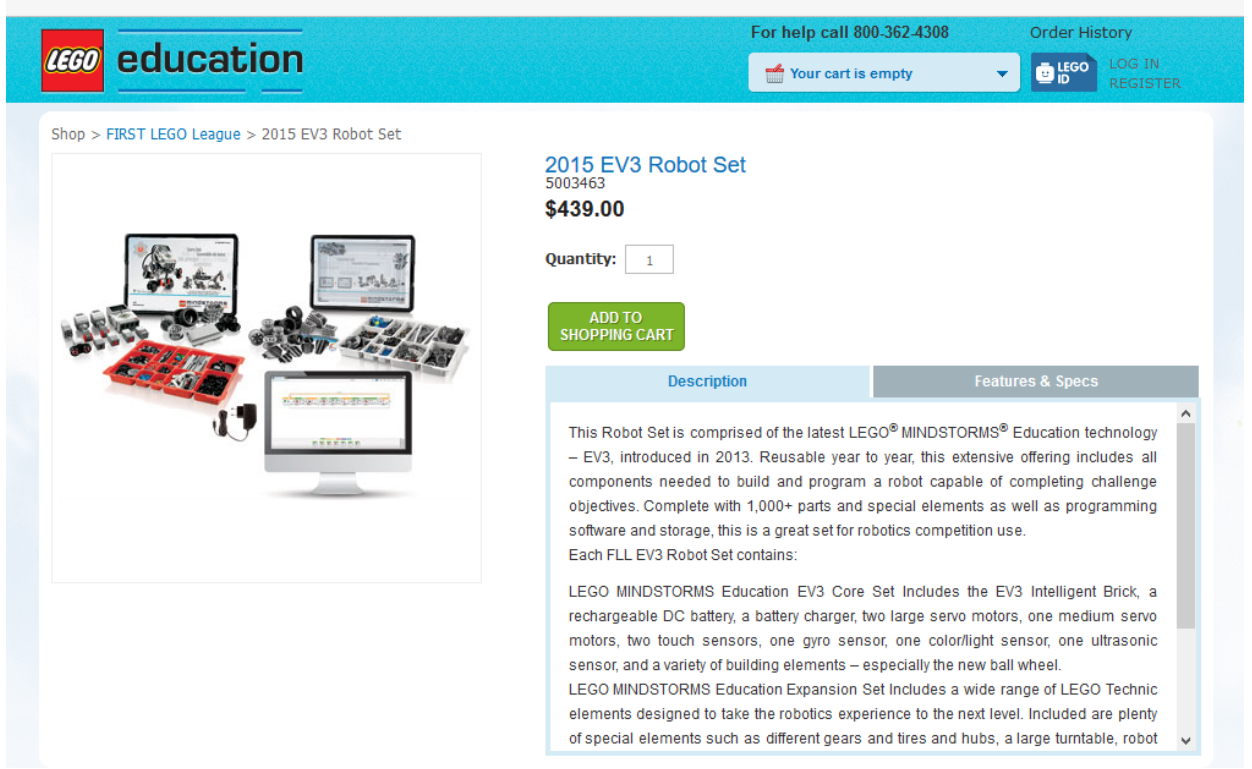
- One-time costs
  - EV3 kit or SPIKE Prime from Lego Education: $350 - $450 plus shipping if purchased from your firstinspires.org Dashboard
  - Materials to build table: $50 - $100
- Annual costs
  - Team Registration: $225
  - Field: $75 plus $28 shipping
  - Qualifier registration: $50
  - State tournament registration: $100
- Other variable costs
  - Computer (old slow computer works fine)
  - Supplies for Project
  - Supplies for posters, handouts, pit decorations, T-shirts
  - Transportation and lodging
- All costs are assumed by the team as a group

Budget about $1000 to start a new team. Cheap compared to hockey or soccer!

FIRST LEGO LEAGUE CHALLENGE

EV3 Kit

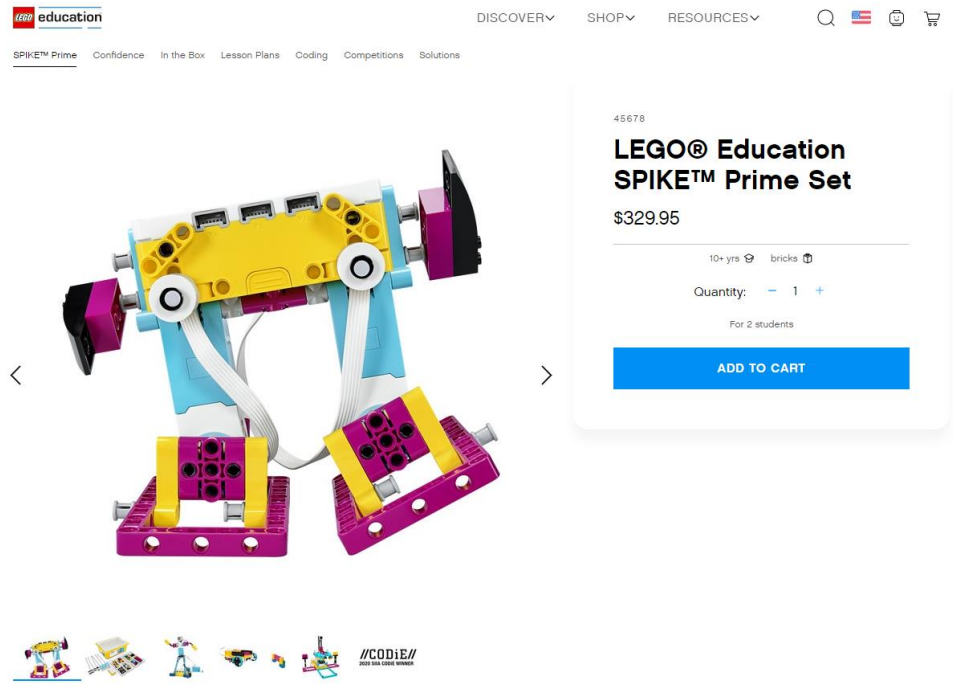
- Over the counter such as Target and Wal-Mart
  - About $350
  - No rechargeable battery (value $79)
  - Fewer sensors
  - Home edition software
- Lego Education
  - $439 plus shipping if ordered from your firstinspires.org Dashboard
  - Rechargeable battery
  - More sensors and more pieces
  - Student edition software (allows “experiments”)



FIRST LEGO LEAGUE CHALLENGE

SPIKE Prime

- Brand new product
  - Drag-and-drop programming language but can also use Python
  - No display
  - Rechargeable battery
  - Easier to build and program
  - Built-in gyro
- Lego Education
  - $330 plus shipping if ordered from your firstinspires.org Dashboard



FIRST LEGO LEAGUE CHALLENGE

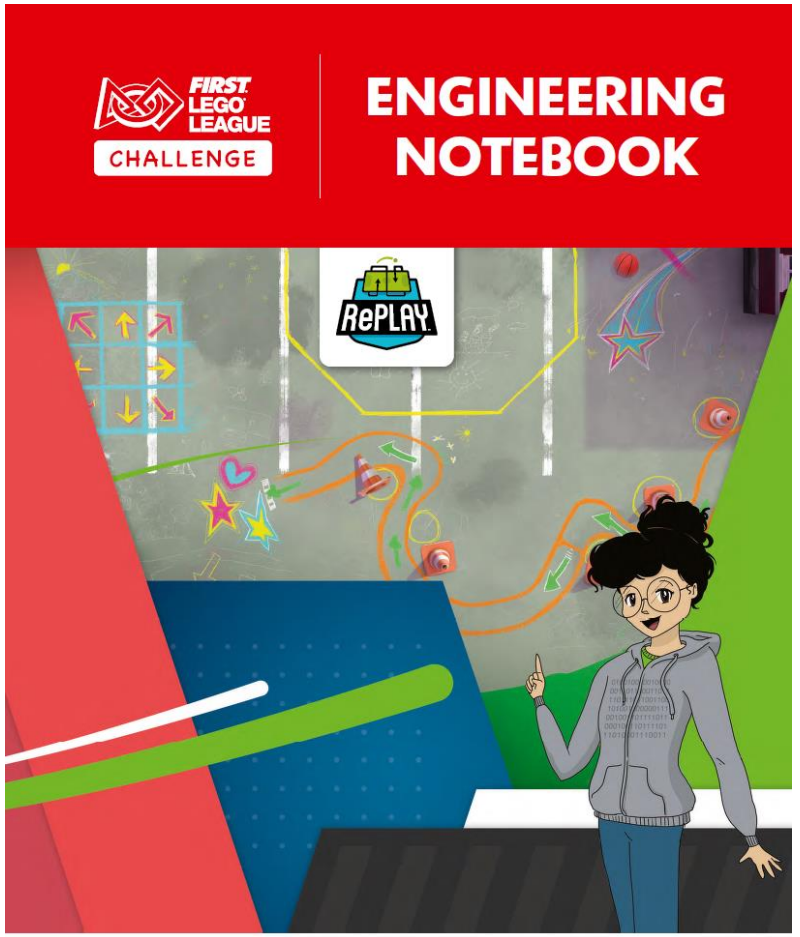
EV3 or SPIKE Prime?

Team Meeting Guide

- Meet as often as you like
- Meet anywhere there's room: school, home, church, community center, etc…
- Set guidelines for the season
- Kids do the work!
- Coaches responsibilities:
  - Logistics: schedule meetings, event registration, manage budget, purchase supplies
  - Teach new skills
  - Ask questions to allow kids to reach their own conclusions
  - Teambuilding exercises
- Season broken up into 12 sessions

Engineering Notebook

- Pairs with the Team Meeting Guide
- Follows the schedule for 12 sessions
  - 1 session could be more than one meeting
- Fill out the Engineering Notebook throughout the season and bring it to your judging sessions
- Important: record challenges and mistakes as well as successes
- Great way to learn about the E/N in FTC and FRC



FIRST LEGO LEAGUE CHALLENGE

Tournaments

A tournament in Alaska typically consists of:

- Morning session:
  - Coaches' meeting
  - 30-minute judging session
  - Practice robot run (does not count)
- Afternoon session
  - Opening Ceremony
  - Robot Game official rounds: 3 matches of 2.5 minutes each
  - Medals and Awards
  - Closing Ceremony

Preparations:

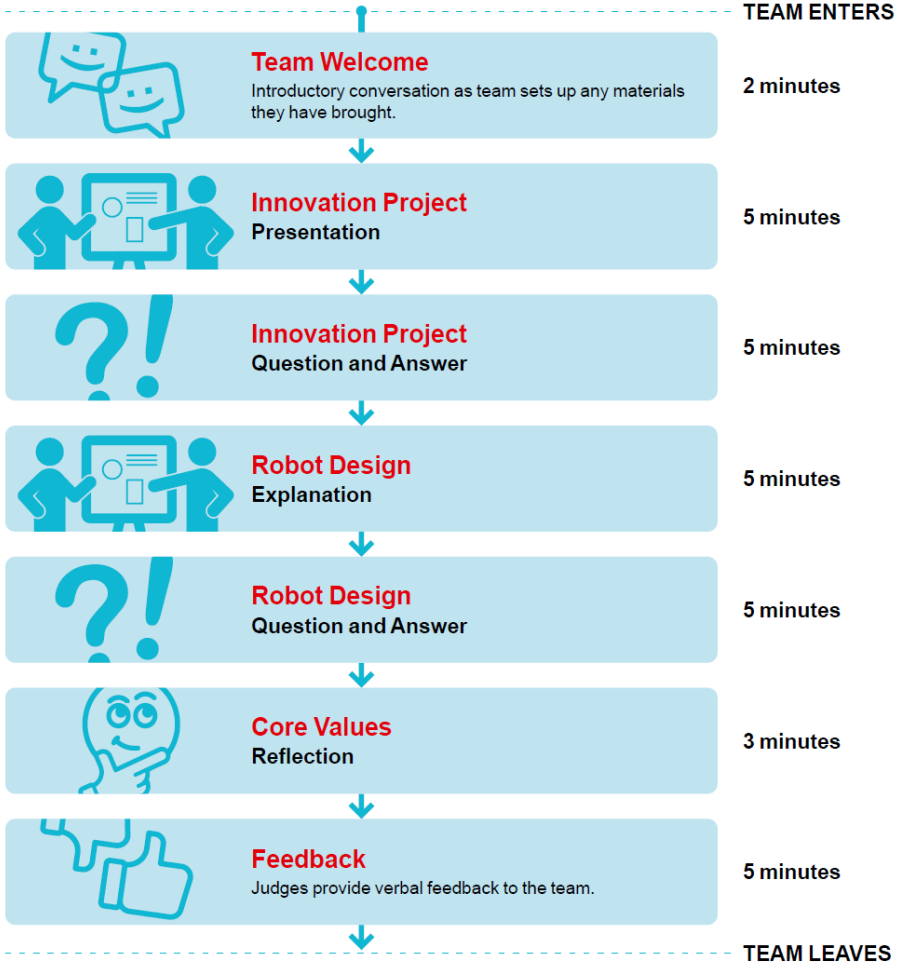
- Packing list
- Ask parents to organize lunch and snacks
- If time allows, decorate your pit area

Try to relax and enjoy the day. And don't drop the robot...

FIRST LEGO LEAGUE CHALLENGE

Tournaments

- Total: 30 minutes
- At least 2 judges but may be more
- Judges will be rating ALL 3 categories
  - Core Values: no team challenge and judged throughout entire 30-minute session.
  - Innovation Project: no change
  - Robot Design: no change
- New this year: 5 minutes of feedback!



FIRST LEGO LEAGUE CHALLENGE

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.

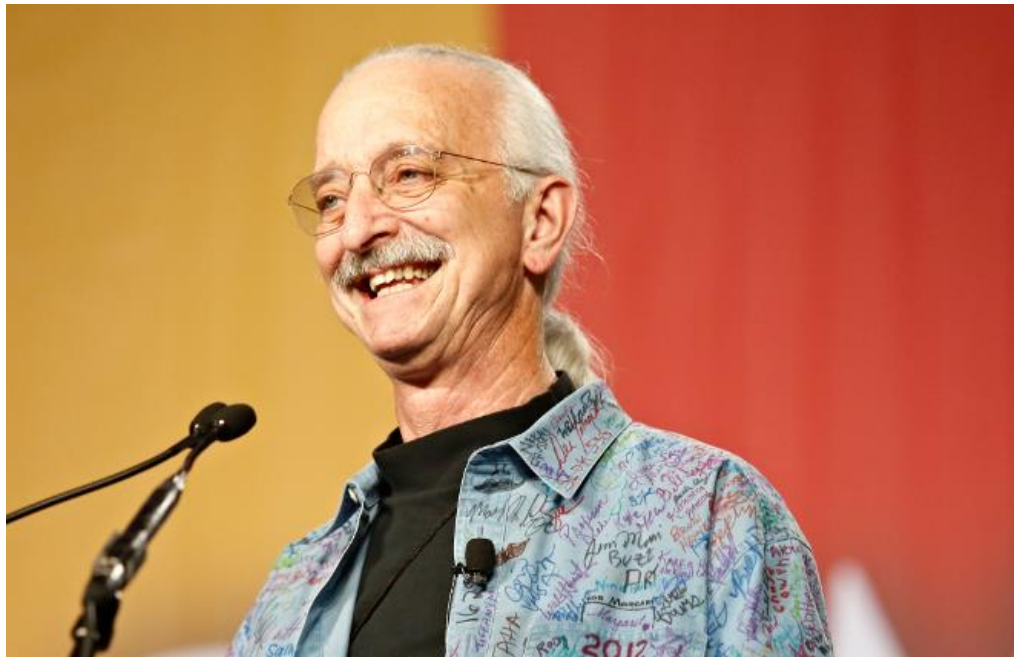
TEAMWORK
We are stronger when we work together.

INCLUSION
We respect each other and embrace our differences.

FUN
We enjoy and celebrate what we do!

FIRST LEGO LEAGUE CHALLENGE

Core Values



"We express the *FIRST* philosophies of *Gracious Professionalism* and *Coopertition* through our Core Values"

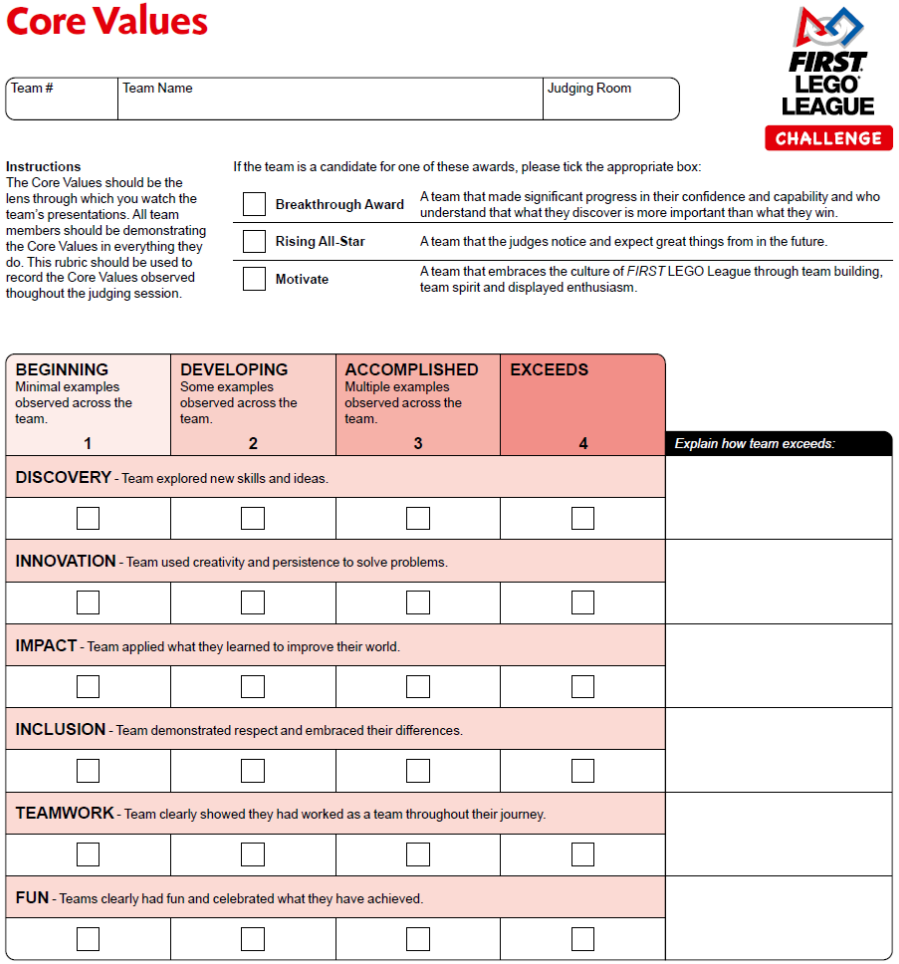
FIRST LEGO LEAGUE CHALLENGE

Core Values

- Fierce competition with mutual gain
- Treat one another with respect while competing like crazy
- We defeat problems not people
- Learn from others and they learn from us
- Assist other teams whenever possible so that they perform at their highest potential
- Gracious Professionalism should be displayed throughout the season not just at tournaments

Core Values

Let the rubric be your guide!



Core Values

Team #	Team Name	Judging Room

Instructions
The Core Values should be the lens through which you watch the team's presentations. All team members should be demonstrating the Core Values in everything they do. This rubric should be used to record the Core Values observed thoughout the judging session.

If the team is a candidate for one of these awards, please tick the appropriate box:

☐	**Breakthrough Award**	A team that made significant progress in their confidence and capability and who understand that what they discover is more important than what they win.
☐	**Rising All-Star**	A team that the judges notice and expect great things from in the future.
☐	**Motivate**	A team that embraces the culture of *FIRST* LEGO League through team building, team spirit and displayed enthusiasm.

BEGINNING Minimal examples observed across the team. 1	**DEVELOPING** Some examples observed across the team. 2	**ACCOMPLISHED** Multiple examples observed across the team. 3	**EXCEEDS** 4	*Explain how team exceeds:*
DISCOVERY - Team explored new skills and ideas.				
☐	☐	☐	☐	
INNOVATION - Team used creativity and persistence to solve problems.				
☐	☐	☐	☐	
IMPACT - Team applied what they learned to improve their world.				
☐	☐	☐	☐	
INCLUSION - Team demonstrated respect and embraced their differences.				
☐	☐	☐	☐	
TEAMWORK - Team clearly showed they had worked as a team throughout their journey.				
☐	☐	☐	☐	
FUN - Teams clearly had fun and celebrated what they have achieved.				
☐	☐	☐	☐	

FIRST LEGO LEAGUE CHALLENGE Core Values

- Choose a team name that will work for the life of the team (not challenge specific)
- Create a team logo
- Choose team colors
- Do EVERYTHING in your team colors
  - T-shirts
  - Banners
  - Posters
  - Handouts
  - Signs
  - Pit decorations
  - Website
  - Facebook

THE BRICKMASTERS

Don't drop the robot!

ALASKA

FLL Team 207

www.brickmastersak.com

THE BRICKMASTERS

FLL TEAM #207

Anchorage, Alaska

BrickMasters Home | Team Members | Team Calendar | **Tutorials** | Gallery | What is FLL? | Why FLL? | Contact Us | Donate!

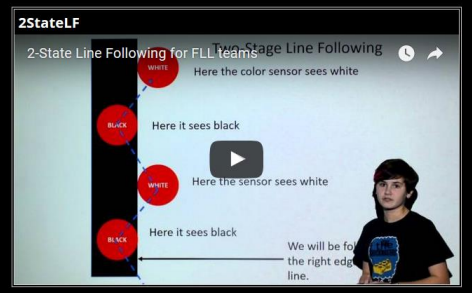
20 days since FLL Nationals at Legoland

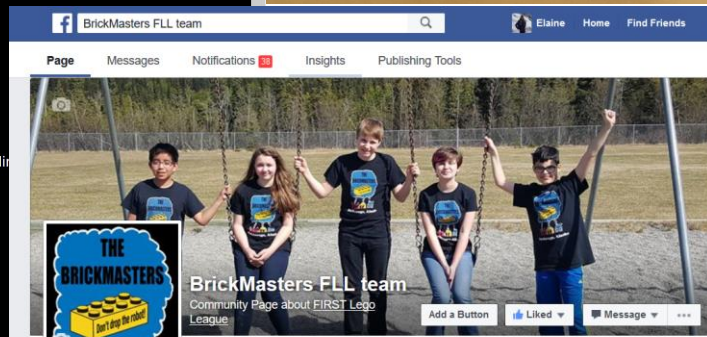
Tutorials

BrickMasters Youtube Channel

The BrickMasters FLL Team #207 has developed a method to follow a line using math taught at the 6th, 7th, or 8th grade level. We establish a li
sensor readings and power levels using y=mx+b. The result is a very flexible, very reliable line (edge) following program.

Step 1: A more simple approach for beginners is 2-state line following: https://www.youtube.com/watch?v=t4E_qOb7KQQ





FIRST LEGO LEAGUE CHALLENGE

Core Values

- Throughout the season, share your *FIRST®* experience with others
- Volunteer at *FIRST®* events
- Practice team building exercises
- For ideas, check out http://www.ventureteambuilding.co.uk/team-building-activities/
- Record your journey with lots of photos
- Create a handout for judges that highlights your outreach efforts and your activities throughout the season
- Demonstrate team spirit at events and presentations
- Make signs for the competition and cheer on other teams
- Decorate your pit area

Core Values

Judging Session

- You can have a short one- to two-minute introduction for the judging session. Sing. Dance. Cheer!
- Shake judges' hands at the end of judging session
- Covert roving judges will take notes on interactions between team members, judges, and competitors.
- Judges often visit the pit area to ask further questions. Be available! And always demonstrate Core Values

FIRST LEGO LEAGUE CHALLENGE

Core Values

Judging Session: sample questions

- What's the most important thing you learned this season?
- What was the most surprising thing you learned this season?
- Which aspect of FLL did your team like best? Least?
- Describe any struggles your team had making sure they addressed all 3 aspects (Innovation Project, Robot, Core Values) of FLL.
- How does your team share with others your excitement and enthusiasm?
- Tell us what you have learned about FLL and how you think it will help you in the future.
- Name one of the FLL Core Values and explain how your team uses it (or could use it) outside of FLL.
- Who can give me an example of a way they used an FLL Core Value this year on their own away from the team?
- What were your team goals this season?
- Tell me about a problem you had on your team and how it was resolved.
- Tell me about how your group makes decisions together.
- What do you do when your group doesn't agree?

FIRST LEGO LEAGUE CHALLENGE Core Values

Judging Session: sample questions

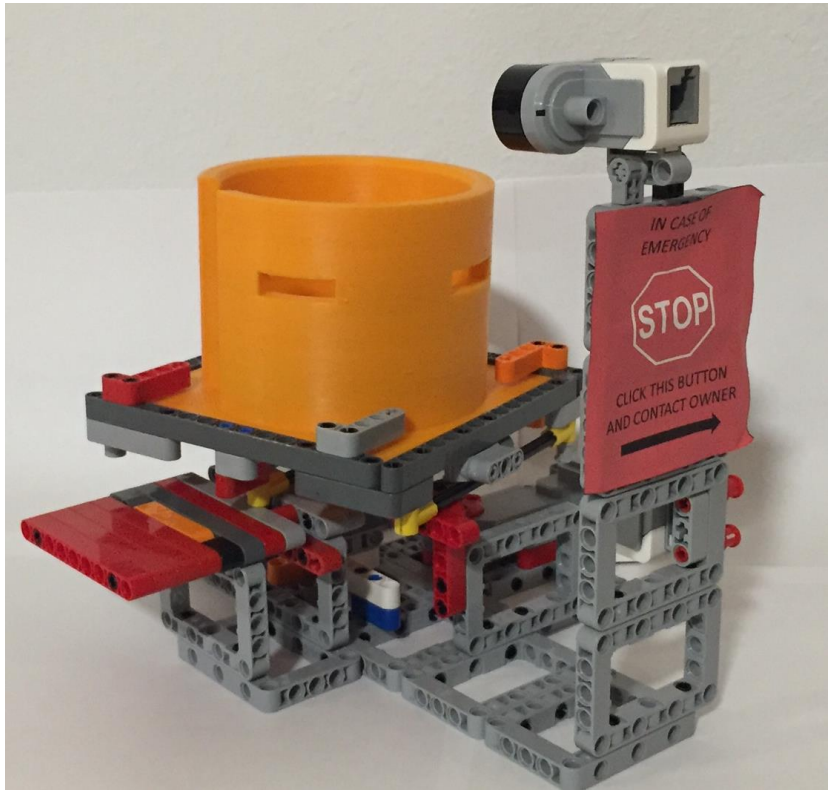
- How does your team solve problems that come up?
- How did your team decide what to do each time you met?
- Tell us about the roles each of you had on the team and how this worked.
- How did you decide who would do each role?
- What's the most important thing you learned from your coach?
- What does your team do when it gets stuck?
- Describe a situation when your coach helped you. What did he/she do?
- Tell me about one thing each of you contributed to the team.
- What do you do when you don't like someone else's idea?
- What does Gracious Professionalism mean to you?
- What example of Gracious Professionalism have you seen another team do today?
- If you saw something happening to another team and thought it wasn't fair, what would you do and why?
- Can you give an example of Gracious Professionalism that your team displayed this season?

FIRST LEGO LEAGUE CHALLENGE

Innovation Project

Innovation Project

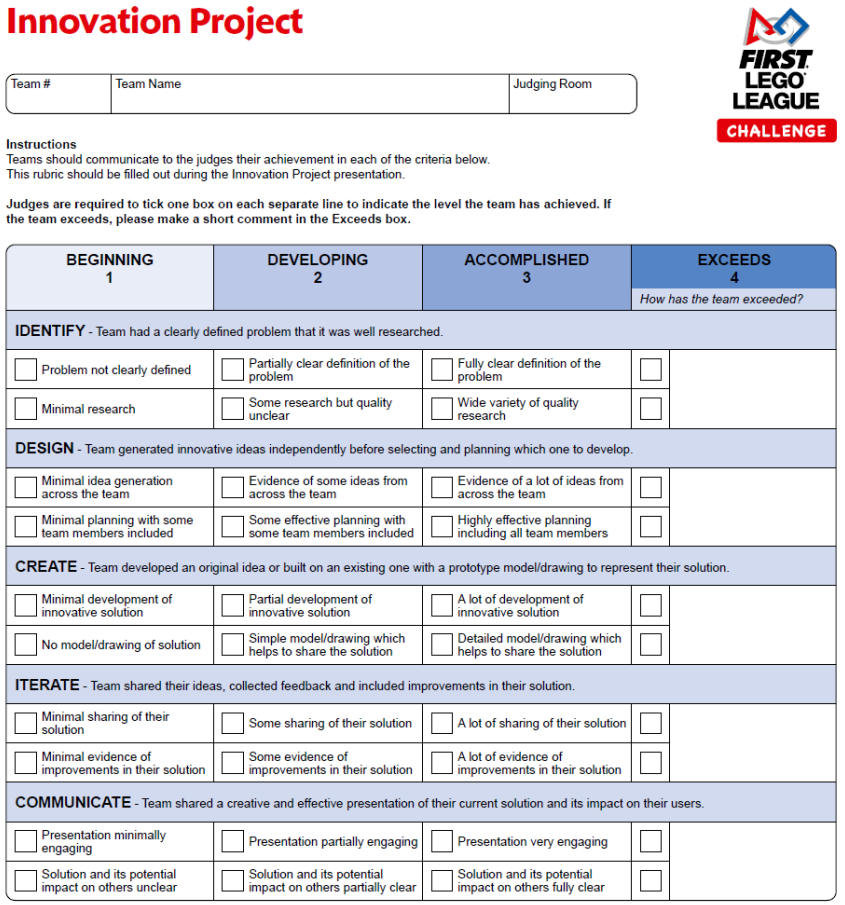
- Choose a problem related to this year's Challenge theme:
  - Can you think of any interesting ways to motivate people to exercise?
  - Is there a particular problem that is stopping people from being active in your community?
- 5 steps:
  1. Identify a problem
  2. Research problem
  3. Design a solution
  4. Share solution with others
  5. Prepare 5-minute presentation
- Global Innovation Award
  - To recognize amazing FLL Projects
  - Financial award from XPRIZE is designed to encourage and assist teams to further develop their innovative solutions to real-world problems



Shake-A-Latte that eliminates the use of plastic stir sticks

Innovation Project

Let the rubric be your guide!



Innovation Project

Team #	Team Name	Judging Room

Instructions
Teams should communicate to the judges their achievement in each of the criteria below.
This rubric should be filled out during the Innovation Project presentation.

Judges are required to tick one box on each separate line to indicate the level the team has achieved. If the team exceeds, please make a short comment in the Exceeds box.

BEGINNING 1	DEVELOPING 2	ACCOMPLISHED 3	EXCEEDS 4 *How has the team exceeded?*
IDENTIFY - Team had a clearly defined problem that it was well researched.			
☐ Problem not clearly defined	☐ Partially clear definition of the problem	☐ Fully clear definition of the problem	☐
☐ Minimal research	☐ Some research but quality unclear	☐ Wide variety of quality research	☐
DESIGN - Team generated innovative ideas independently before selecting and planning which one to develop.			
☐ Minimal idea generation across the team	☐ Evidence of some ideas from across the team	☐ Evidence of a lot of ideas from across the team	☐
☐ Minimal planning with some team members included	☐ Some effective planning with some team members included	☐ Highly effective planning including all team members	☐
CREATE - Team developed an original idea or built on an existing one with a prototype model/drawing to represent their solution.			
☐ Minimal development of innovative solution	☐ Partial development of innovative solution	☐ A lot of development of innovative solution	☐
☐ No model/drawing of solution	☐ Simple model/drawing which helps to share the solution	☐ Detailed model/drawing which helps to share the solution	☐
ITERATE - Team shared their ideas, collected feedback and included improvements in their solution.			
☐ Minimal sharing of their solution	☐ Some sharing of their solution	☐ A lot of sharing of their solution	☐
☐ Minimal evidence of improvements in their solution	☐ Some evidence of improvements in their solution	☐ A lot of evidence of improvements in their solution	☐
COMMUNICATE - Team shared a creative and effective presentation of their current solution and its impact on their users.			
☐ Presentation minimally engaging	☐ Presentation partially engaging	☐ Presentation very engaging	☐
☐ Solution and its potential impact on others unclear	☐ Solution and its potential impact on others partially clear	☐ Solution and its potential impact on others fully clear	☐

FIRST LEGO LEAGUE CHALLENGE

Innovation Project

Presentation

- strict 5-minute limit
- write script that addresses questions from rubric
  - clearly identify problem
  - state why your solution is innovative and will benefit others
  - state your research
  - state how project was shared
  - address cost
- make costumes and props
- Rehearse! Rehearse! Rehearse!
  - Invite parents to see presentation and ask them to ask lots of questions so kids can practice
  - Assign roles for answering questions but be flexible
  - Videotape rehearsals and have kids watch it

Innovation Project

Judging session: sample questions

- What does this part do?
- How did you come up with that idea?
- What other ideas did you try?
- Why did you choose this idea over others?
- What kind of research did you do?
- What was the most helpful resource that your team used? Why?
- How will your solution benefit others?
- Did you consult with experts in this field?
- Did anyone assist you in building this prototype?
- How could you mass produce this product?
- What would be the cost of production?
- Did you share your idea? With whom?
- Have you thought of patenting your idea?
- Can you tell us about a problem you discovered or something that you learned that surprised you while completing this project?

FIRST LEGO LEAGUE CHALLENGE

Robot Game

FIRST LEGO LEAGUE CHALLENGE

Robot Game

- Played on an 8’ X 4’ field that consists of a mat and various Lego mission models
- 2 ½ minutes to complete as many missions as possible
- 15-18 missions related to the Challenge topic
- Missions completed by a pre-programmed autonomous robot built in accordance with all allowable parts, software and other rules
- Kids can modify robot only while in “base” so as not to incur any touch penalties
- Only two robot operators at the table at a time

Robot Design

Let the rubric be your guide!

(where have I heard that before?)

Robot Design

Team #	Team Name	Judging Room

Instructions
Teams should communicate to the judges their achievement in each of the criteria below.
This rubric should be filled out during the Robot Design explanation.

Judges are required to tick one box on each separate line to indicate the level the team has achieved. If the team exceeds, please make a short comment in the Exceeds box.

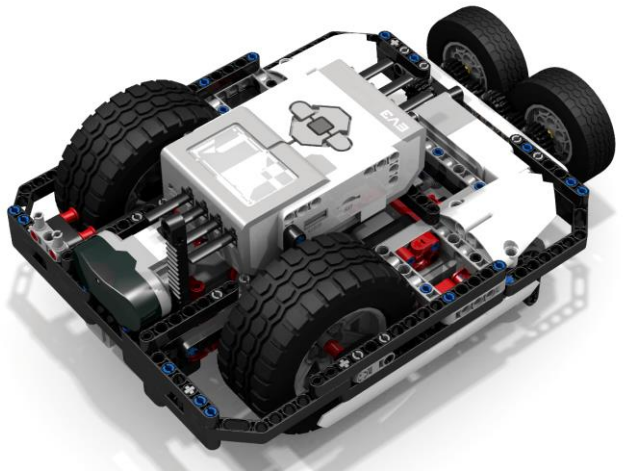
BEGINNING 1	DEVELOPING 2	ACCOMPLISHED 3	EXCEEDS 4 *How has the team exceeded?*
IDENTIFY - Team had a clearly defined mission strategy and explored building and coding skills they needed.			
☐ No clear mission strategy	☐ Partially clear mission strategy	☐ Fully clear mission strategy	☐
☐ Some team members learned building and coding skills	☐ Many team members learned building and coding skills	☐ All team members learned building and coding skills	☐
DESIGN - Team produced innovative designs and a clear workplan, seeking guidance as needed.			
☐ Minimal evidence of an effective workplan	☐ Some evidence of an effective workplan	☐ A lot of evidence of an effective workplan	☐
☐ Minimal explanation of robot and code's innovative features	☐ Some explanation of robot and code's innovative features	☐ A lot of explanation of robot and code's innovative features	☐
CREATE - Team developed an effective robot and code solution matching their mission strategy.			
☐ Limited functionality of robot attachments or sensors	☐ Developing functionality of robot attachments or sensors	☐ Good functionality of robot attachments or sensors	☐
☐ Unclear explanation of how code makes their robot act	☐ Partially clear explanation of how code makes the robot act	☐ Fully clear explanation of how code makes their robot act	☐
ITERATE - Team repeatedly tested their robot and code to identify areas for improvement and incorporated the findings into their current solution.			
☐ Minimal evidence of testing their robot and code	☐ Some evidence of testing their robot and code	☐ A lot of evidence of testing their robot and code	☐
☐ Minimal evidence their robot and code was improved	☐ Some evidence their robot and code was improved	☐ A lot of evidence their robot and code was improved	☐
COMMUNICATE - Team's explanation of the robot design process was effective and showed how all team members have been involved.			
☐ Unclear explanation of robot design process	☐ Partially clear explanation of robot design process	☐ Fully clear explanation of robot design process	☐
☐ Clear evidence that some team members involved	☐ Clear evidence that many team members involved	☐ Clear evidence that all team members involved	☐

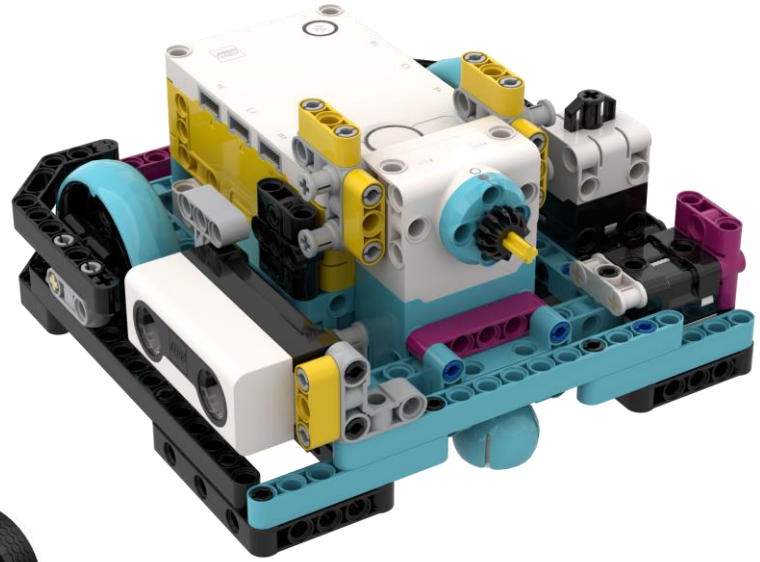
FIRST LEGO LEAGUE CHALLENGE Robot Design

- Find building instructions for a robot you like and then TOTALLY REDESIGN IT to meet your needs
  - Frame to support weight of robot on axles
  - Flat bumper to allow robot to be aligned with south or west wall in base
  - Make sure cables are not rubbing on wheels or table
  - Do not block access to charging port on battery
  - Do not put treads on passive wheels to reduce friction
  - Lower center of gravity tends to be more stable
- Try to make attachments do multiple tasks
- Make sure robot/attachments are no more than 12 inches high while in Launch Area or Home
- Make sure attachments do not stick out over west or south wall when leaving Launch Area or coming back Home
- Color sensors are critical for finding and following lines. **Insulate them from ambient light**.
- Touch sensors are not necessary to detect wall – just have a flat back bumper
- Touch and ultrasonic sensors can however be useful in completing certain missions
- Gyro sensor is slow to report readings and must be programmed carefully
- To order pieces: www.brickowl.com or www.bricklink.com

FIRST LEGO LEAGUE CHALLENGE

Robot Design





FIRST LEGO LEAGUE CHALLENGE

Robot Design

- Programs can and should complete multiple missions
- Slow down! Kids will want to do everything at 100% power!
- Start all programs from the same position to cut down on operator error during tournaments
- Robot performs *exactly* what you asked it to do and *only* what you asked it to do
- Document your programs
- Tables are not identical. Lighting in the gym at South High is horrible. Competition mats are usually new and will be wavy. PLAN FOR VARIABILITY!
- Eventually, your goal should be to use MyBlocks (subroutines)
  - Forward, backwards, turn, arm up, arm down
  - Great off-season activity
  - Helps judges read your code
- A master program will save 15-30 seconds in base
- YouTube has hundreds of programming tutorials

FIRST LEGO LEAGUE CHALLENGE

Robot Design

Judging session

- Have a general script and take control of judging session
- Use rubric as a guide
  - Communicate mission strategy
  - Explain building and programming used
  - Tell judges what's innovative
  - Provide date on reliability
- Feel free to bring
  - laptop with programs
  - Printed programs
  - Photos of robot, attachments, and jigs
  - Photos of kids building and programming
- Poster(s) optional but great for display in pit

FIRST LEGO LEAGUE CHALLENGE Robot Design

Judging session: sample questions

- Which missions are you doing in the competition?
- Tell me about how you decided which missions you are going to do?
- Why don’t you walk me through how you use each one of these attachments to do the different missions?
- Who designed this component? How many times do you think you had to change it before you finalized on that design?
- How did your coaches help you?
- Who worked on the programming?
- Which was the hardest challenge to program? Why?
- Which blocks do you use to program?
- Do you use rotations, degrees or seconds? Why didn’t you use time?
- Do you do multiple challenges before your robot returns to base?
- Do you find that your robot always does what it’s supposed to do?
- When it doesn’t do what it’s supposed to do why is that?
- Do you have any programs to show us?
- Is there anything else you want to tell us about how you designed and built your robot?
- What is the highest score you have gotten when practicing?