



**Livingston Robotics Club (LRC)  
FIRST Lego League (FLL)**

**Parents Frequently Asked Questions  
(Updated July 2011)**

**General:**

1) What is FIRST?

FIRST (**F**or **I**nspiration and **R**ecognition of **S**cience and **T**echnology) was found in 1989 by Dean Kamen (the inventor of Segway and insulin pump) to inspire young people to be science and technology leaders, by engaging them in exciting mentor-based programs that build science, engineering and technology skills, inspire innovation, and foster well-rounded life skills including self-confidence, communication, and leadership. FIRST is a non-profit, volunteer based organization. All coaches, mentors, sponsors, advisor, judges, referees, event organizer and partners involved are volunteers.

2) What is FIRST LEGO League (FLL)?

In 1998, *FIRST* Founder partnered with the toy maker The LEGO Group to create a program that engages younger children in playful and meaningful learning while helping them to discover the fun in science and technology. By 2010, FLL has reached more than 171,000 kids in more than 50 countries around the globe.

*FIRST*LEGO League (FLL) is an exciting and fun global robotics program that ignites an enthusiasm for discovery, science, and technology in kids ages 9 to 14. Each year FLL teams embark on an adventurous Challenge based on current, real-world issues. Guided by a team coach and assisted by mentor. Using the yearly Challenges, FLL entices kids to think like scientists and engineers by:

- Providing a fun, creative, hands-on learning experience
- Teaching kids to experiment and overcome obstacles
- Building self-esteem and confidence

3) When is the FLL Season?

The FLL competition season in NJ is typically from September to mid-December, although some other States or countries may have a slightly shorter or longer season. The annual FLL challenge is announced globally around September 3 each year to start off the international competition. Children from around the world are expected to conduct research and design a robot using all LEGO parts comply with the FLL missions given. For those teams who won the State Champion's award, they may get an invitation to the national or international competitions.

A typically FLL season:

May – September  
First week of September  
October – November  
November – December  
End of April – Mid May

Online registration  
Annual challenge revealed  
Build, research and present  
NJ Qualifying tournaments and State Championship  
World Festival and Open Championships



4) What is the FLL age limit?

The FLL age limit is 9 to 14-years-old for US and Canada. The child can be younger than 9 depending on maturity, but cannot be a day older than 14 as of January 1 of the competition year in US. For foreign teams, the upper age limit is 16 due to lack of the high school level robotics competitions such as FIRST Tech Challenge (FTC) and FIRST Robotics Competition (FRC).

5) How many members per team?

Each FLL team needs a minimum of 3 members, maximum 10 members. However, since all FLL teams currently in Livingston Robotics Club (LRC) are neighborhood teams, some coaches may set the team limit at 3 to 8 members depending on the capacity of their homes.

6) What is a FIRST LEGO League (FLL) robotics team like?

It is not just about robots, it is about a journey to inspire children's interests in science and engineering, that emphasizes independent learning, teamwork and gracious professionalism, where winning is not the most important result. Coaches are often volunteer parents or teachers to mentor the children either in their homes or in schools. A group of children with similar interests are working together toward a common goal within a limited time frame to achieve the given challenges.

7) What is a FIRST LEGO League (FLL) competition like?

FLL competition consists of two main parts, the **Game** (robot) and the **Project** (science research).

Each team has about 10 weeks to prepare for being judged in 4 categories. The competition is in four equal categories: **Project, Teamwork, Robot Design and Robot Performance:**

- Project: Research and solve a real-world problem based on the Challenge theme. Do a 5-minutes presentation on team's research, finding and innovative solution
- Robot Design: Build an autonomous robot using engineering concepts
- Robot Performance (25%): Finish the play field missions in 2.5 minutes, perfect score is 400 points
- Teamwork: Demonstrate how well the team work together to resolve problems and conflicts and finding solutions.

A team demonstrating excellence in all four categories and celebrates the ultimate success of the *FIRST* mission and FLL values will win the most prestigious **Champion's Award**.

Each LRC team must first participate in a qualifying tournament within its State. Winners of each of the above four categories plus a Champion's Award winner from the qualifying tournament will be eligible to attend the State Championship. The 1<sup>st</sup> place State Champion's Award winner may receive an invitation to the World Festival which will be held in end of April in St. Louis or the Open Championship in May at a location to be determined.

**Joining or Forming a Team:**

8) How much time/effort is expected to participate in a **competitive** FLL Team?

It depends on the team's commitment, goal, and coach's availability. When, where, how often and how long should be decided base on what works best for the team.

- A. Typically, a competitive team meets 2 to 3 times a week, 2 to 3 hours each time. As the tournament date approaches, extra practice/meetings may be scheduled.



- B. The students are expected to research on topics related to the Project, submit reports and report their findings to the team every week. They should also contact experts and mentors, attend field trips, prepare and rehearse their presentation, and present their projects to the relevant community.
- C. The FLL season is a fast pace, multi-facet, challenging competition. Coaches are not responsible for make-up session if you miss a meeting. You will be left behind if you can't keep up with the team curriculum.
- D. If a child does not live up to his/her promised commitment level, put in the best effort, or be able to keep up with the team progress, the coach shall have the right to discontinue him/her from the team any time.
- E. Expect to participate in community outreach events and activities as volunteers in addition to regular team meetings.
- F. All LRC FLL teams are required to commit a similar amount of effort and time between the research project and the robot design.

9) How much time/effort is expected to participate in a **non-competitive** FLL Team?

Again, it depends on the team's age and commitment, and coach's availability. Some school teams or club can meet as little as 45 minutes to 2 hours once a week; then increase the number of meetings as approach the tournament date. However, even in a non-competitive team as part of Livingston Robotics Club, guidelines as stated in Question #8 above still apply, but with reduced meeting time, in a much more flexible and relaxed learning environment.

10) How would I know if my child should participate in a competitive or a non-competitive team?

Go through part **B** of the LRC application package carefully, think about your child's interest, learning style, and other extra curriculums or social engagement he/she has during the FLL season. Set priorities, and be very realistic with your willingness to adjust his/her schedule, and the necessary down time and sleep your child needs, and how motivated he/she is to excel. Feedback from last season's coach can also be a valuable guide. Then select a realistic and achievable commitment level, goal and in part **B**. Base on the application form, it will be the club and coaches' discretion to accept your child in his/her team in the new season.

11) What do children learn through the FLL program?

After they finish their 1<sup>st</sup> FLL season, most children agree this is the most difficult and challenging thing they've ever done in their life.

- A. Respecting each other and practicing "Gracious Professionalism", which is the core value of FIRST. Gracious Professionalism encourages high-quality work, emphasizes the value of others, and respects individuals and the community. Fierce competition and mutual gain are not separate notions. Children are learn and compete like crazy, but treat one another with respect and kindness in the process. Knowledge, competition, and empathy are comfortably blended. In the long run, Gracious Professionalism is part of pursuing a meaningful life, one would learn to be a valuable member of the society, and act with integrity and sensitivity.
- B. Build up their self-confidence and discover his/her strength.
- C. Learn how to work as a team in an intensive environment. There is no personal glory awarded for more or less work performed; only be judged and can win together as a team.



- D. Learn how to do independent research and present their project, this may include: writing scripts, design posters, creating PowerPoint presentation, public speaking.
- E. Time management: FLL activities require a lot of independent studies on top of the regular school work. Each child needs to manage their time wisely and efficiently in order to keep up the work required by a competitive FLL team while maintaining their school grades.
- F. Community presentation and outreach: A successful science project requires to be presented to relevant audience before the team goes to the tournament. This may include: school teachers, experts in the related fields, other FLL teams, etc. In addition, a core value team also needs to be involved in the local community outreach and functions.

12) When do I need to make a decision to join or form a team?

You should start the inquiries and application process between March to May for find an existing team. Make a firm decision to be in a team preferably before the end of July, or decide to start your own team as early as possible no later than early August. This will give you enough time to work through each option, register a team and do some pre-season training before September.

13) What if my child is younger than 9 or older than 14?

There are other divisions in FIRST available with the similar visions and mission. For children 6 to 9, there is the Jr. FIRST LEGO League (Jr FLL) where the children can participate in the similar challenge theme as FLL but only need to make a science poster and a LEGO model with limited programming and moving parts. Robotics programming is optional.

For high school students age 14 and older, there is the FIRST Tech Challenge (FTC) and FIRST Robotics Competition (FRC). FTC is a mid-level, small size (1 to 10 member team) robotics competition; whereas FRC is a high school varsity robotics team consists of as many as 10 to 70+ members.

14) What are my options with joining a school team or a neighborhood team?

You can contact your child's school or PTA first to see if there is an after-school club or program available to fit your needs, or if there is any opening to sign up. This is best done before the end of the prior school year. If no school team is available, (and you cannot persuade them to start one), you can look for a nearby neighborhood team to join. LRC has an annual NJ FLL team list on our website. However, most neighborhood teams do not readily accept new members or it may be difficult to find their contact information. You can sign up with the [FIRST TeamUp](#) to try to look for a team nearby, or post a question on the [FLL forum](#).

15) How to join Livingston Robotics Club?

LRC has a FLL division since 2007, a Jr. FLL division was added in 2009, and a FTC division started in 2010. Parent coaches are our core support of these team formations and success.

You can apply to LRC as an individual member to find an opening in the existing teams or receive network support to start your own team. Once a team is formed and registered officially for the season with US FIRST, the team can submit a team application as a whole to LRC to be part of the LRC network.

Fill out a Livingston Robotics Club Application Form (or see "[Apply](#)" page on LRC website), and email the application form to the respective LRC division [contacts](#). From around March 1 to June 15 will be the LRC's new team member registration period. Applications will be accepted until June 15. All



existing and new teams should to register with the US FIRST by end of July. No new members are accepted after July unless is at each team coach's discretion. Team registration with LRC is due by August 15.

Like most after-school activities in the fall, you want to make sure that your child has found a team, registered, and get settled to start up with the pre-season training before September if possible. The earlier you apply, the greater chance to find out if there is any opening with the existing teams or that you will have to start your own team. If you are forming your own team, just collect the application forms from your team members, there is no need to submit it to LRC for finding a team placement. The application is just a guide to determine what are your commitments, expectations and ability to contribute to the team. However, each team needs to formally apply to LRC for a club membership. There is a nominal team club fee based on the FIRST division and the number of students per team. The club fee is tax exempt and it is the main funding source of LRC operational cost.

### **Cost to Join FLL:**

16) How much does it cost to participate in an FLL team?

In addition to the LRC team membership fee, there is usually a team fees paid directly to the each individual team coach to cover the team expense during the season. The team fee is for the team official registration, one set of Mindstorm NXT kit, mission model kit, field material cost, team T-shirt, tournament registration fees, project supplies, snacks, traveling costs, etc. New team should budget minimum \$800 to \$1,000 per team without including additional sets of Mindstorm NXT kit or laptops for programming. It may be more or less depending on the team size and what items it already incurs from the previous season(s), and how many Mindstorms NXT kits to acquired.

17) What robotic kit do I need in order to participate in an FLL team?

The LRC teams are encouraged with a lot of hands on building and programming experiences. It is recommended that each member equips with his/her own of the following if possible:

- NXT robotic kits plus ancillary building parts etc: approximately \$450;
- A laptop computer which you can use for robot programming, research, write essays, and prepare PowerPoint, etc.;
- Rechargeable batteries and charger;
- A tackle box for all personal LEGO parts
- Also see the end of this FAQ for more information.

18) Is there any financial assistance for new teams?

A grant may be available through the local FLL partner. For example, in 2008, there was a \$275 hardship grant for the new NJ FLL team to help cover some of the registration and play mat fee. However, there is no guarantee that such grant will be available since then. Therefore, each team is encouraged to conduct its own fundraising effort.

19) What if my child really interested in robotics but could not afford his own robotics kits, laptop or team fees?

If you are in a neighborhood team, try to fundraise for more resources or share with a teammate.

If your school has the robotics program, try to join the school to reduce the out-of-pocket expenses. For example, since 2010 in Livingston, Harrison Elementary School has three Jr. FLL teams in the after-school program, however, capacity is limited. Mt. Pleasant Middle School (6<sup>th</sup> grade) has



multiple sets of Mindstorm NXT kits for its robotics club but it is currently lack of teacher or coaches to lead the effort. The Livingston High School has established a successful FTC team and funded a newly constructed robotics building for its robotics curriculum since 2008. It is opened to 9<sup>th</sup> to 12<sup>th</sup> graders, divided into an A-team (competitive) and B-team (training). Be an advocate for your child in the local schools and community to incorporate the robotics curriculum; be active in providing assistance and mentorship to assist the schools and the teachers.

20) Where can my child learn more about robotics programming?

You can sign up to take robotics-related courses at the local robotics learning centers or summer schools. Most of our teams' members just utilize the LEGO Mindstorm tutorial and information posted online in a self-taught environment.

**Coaching a Team:**

21) Who are the coaches?

The coaches in Livingston Robotics Club are volunteer parents like you and me. Most coaches have no robotics or teaching experience, nor necessarily have the background in science and engineering either (although that could be a plus). The coaches are just parents who are passionate in providing a different venue to inspire their children's interests in science and technology, that perhaps currently not available in their local school districts. The coaches learn new skills alongside with the team, guide the team but let the children do the work. The coaches may draw upon other team parents to help out in teaching technical concepts, writing, presentation, graphics design, and other miscellaneous tasks. Most likely, the current FLL teams are already at capacity or with very limited openings. Therefore, whenever new parents step up to coach, a new team can be formed for the season to gather children of similar age and interests.

22) How many coaches per team?

Minimum 2 coaches per team is recommended regardless of the team size. For example, one will be the head coach focusing on the technical training, oversee and make decisions for the team; the other coach will assist in coaching project research, presentation, handling the team administration and paperwork. Often, the responsibility and the role are strictly based on individual's strength and specialty. The two coaches can divide responsibilities and back up each other in any way they see feasible. With two coaches, FIRST can send email to two different adults in the team, so the communication is not rely on only one person to forward and manage all the information.

23) Where is the team meetings held?

The team meetings are typically held at the home of each team's head coach or in school if it is a school activity. The biggest obstacle we found at LRC in the past was not only to have the parents step up to coach, but also to have them volunteer their personal space to host the team meetings, which could greatly affect their family's schedule and privacy.

Fortunately, in 2011, Livingston Robotics Club has found a more permanent facility to host the team meetings and to store the play table and equipments where necessary. Each LRC team needs to submit a meeting schedule to apply for the use of the clubhouse. Alternately, some coaches may prefer the home setting for those late nights and long hour crunches. All team members should respect the coach's schedule, personal and club space (and their refrigerator), not to incur damage to the furnishings, and clean up after each meeting.



24) What do I need to set up to coach a FLL team?

You will need room to put up a 4 ft x 8 ft play table, a long table for children to put their laptops to program and write report, floor or table space to build robots and spread out the LEGO pieces, a place to hold team meetings, a snack table to store snacks and drinks, a white board to write down ideas, plenty of extension cords for laptops and battery chargers, a USB key to transfer files and photos, a camera to take team pictures, and internet access for project research, etc. If meeting is held at home, an understanding spouse will be a major asset.

25) How do I build a FLL play table for my team?

[Table construction instructions](#) for the standard FLL play table (made of heavy plywood) or a lightweight ([foam](#)) table are available on FLL official website. Some of the more competitive teams had elected to build a [sectional](#) but hollow wooden FLL table designed by team Landroids to avoid warping and bending of the plywood or insulation foam. The official FLL plywood table is easy to construct, but very heavy to move and difficult to store away; plywood also tend to warp with moisture. The insulation foam table is easy to construct, foldable, light weight, but may dent and rip if not handle with care. The Landroids sectional table can be taken apart to small pieces, easy assembly like the Ikea furniture, light weight for easy storage and transport, very straight and smooth. However, the table will require more advance wood working skills and tools. Carefully assess your needs, budget and woodworking skills to select the best types of table for your team.

26) Why do parents need to volunteer if they are not coaching?

Since FLL at LRC is strictly a volunteering effort, parent involvement is crucial to the success of the team. Our only insurance is the mutual trusts between the team parents and the coaches (also parents) that we are all working together to provide the best learning environment and educational opportunities for our children. This is not a baby-sitting service where you can drop off your child, pick up later and expect progress. The most successful teams require all 3 parties: the members, the coaches, and the parents working together equally to achieve results. There are a lot of parental support and weekly homework needed. Parents also must chaperone their own child to the tournament.

27) What if my child is hyperactive, has learning disability, attention deficient, or has medical problems and allergies?

You know your child best, if there is a learning, behavior or medical concern, please disclose and discuss it with the team coach. Most of the coaches are not trained in special education or emergency response, it would probably be best that you be your own child's coach. Otherwise, it is recommended that one of the child's parents or caregiver be at every team meeting and team function to assist and oversee your own child. Should the child's behavior, level of comprehension, or health issues becomes a major concern to affect coaching effectively, or hinder the team progress or safety of others, the coach shall have the ultimate decision to request member's withdrawal at any time. However, there are example where many successful FLL teams are made up of children with learning disability, chronic illnesses and social constraints. FLL activities can be different from the typical school classroom which has a more stringent and monotonous learning environment. This can be a way to re-focus student's energy and interest by doing something fun and challenging.

28) How much time is split between robot building and the research project?

According to the FLL judging criteria, there are two judging categories for the robot (robot design 25% and robot performance 25% with top score of 400), only one category or 25% in the research project, if not including the teamwork judging 25%. However, all LRC teams are encouraged to spend an equal amount of time and effort in both robot and project. LRC strongly emphasize on the



importance of STEM (Science, Technology, Engineering and Math) education and would prefer our teams be more well rounded instead of focusing solely on winning the robot performance.

29) Can I form my own team without joining Livingston Robotics Club?

Yes. Anyone is free to form his/her own FLL team, it is not mandatory to join LRC or belong to any particular organization. The LRC coaches are encouraged to form a centralized communication network, share resources, ask each other questions, and mentor the new members. This mutual network and communication enable all of our rookie teams to reduce the learning curve, and achieve notable progress to meet its team goals. In addition, all LRC teams also participate in various joint outreach activities, field trips, workshops, exhibitions, or parties. LRC is affiliated with Healthy Community and Healthy Youth of Livingston (HCHY), which is a 501(C)(3) non-profit organization. This will enable the club and individual teams to receive tax exempt sponsorships and donations.

### **Registering a Team:**

30) When should I register a FLL team?

Although the FLL competition season starts in first week of September, the global team registration starts in the beginning of May 1, and ends at the end of September, depending on capacity (probably around 10,000 teams in US and Canada; 8,000 teams elsewhere in the world). The play mission kits for each year's robot mission is shipped out around the end of July, but may arrive as late as mid-October if register in September. Therefore, the earlier a team is formed and registered, the earlier the team will receive the play field.

and can start team scheduling, logo design, building a FLL table, prepare for the project research, learning the basics of robot building and programming working through the tutorial during the summer.

31) How do I go to register a FLL team?

Go to <https://gofll.usfirst.org/> fill out the forms and pay for the registration. You will receive a new FLL and Jr. FLL team number each year. All your LRC team registration, awards and team tracking will be based on the assigned team number, not the team name. Note that for FLL and Jr. FLL, the team number changes every year depending on the time of the registration.

32) What if my team cannot decide on a team name or a team coach at the time of registering a team?

This is actually very common. You can register a team and a head coach in the system, then update the information later, as long as it is prior to sign up for a local qualifying event (around October 1<sup>st</sup> in NJ). Otherwise your team name will not appear on the tournament score board correctly. The head coach can invite an assistance coach during registration or later in the registration system. Both persons then will receive periodic emails updates from FIRST and the local FLL partner who organize the tournaments.

33) What if my team wants to change a team name each year?

Some teams like to have their team name match to challenge theme and change them every year. You are free to do so in FLL and Jr. FLL. However, do consider the time and cost in designing new team logo and team shirts, changing the website or other social media associated with the team. More importantly, it is harder to establish a "brand name" for your team if people can't associate the new team name with the past team achievements.



34) Can I get additional play mat for my child?

One FLL play mat/field kit is allowed per each team registration. The field mat cannot be purchased separately. However, if you feel that a play mat/field kit at home will help your child's programming progress, the parent may register a team and pay for the team registration separately without competing in a tournament. Ultimately, it really depends on how motivated your child is in learning the basics with or without the field mat at home. A private field kit does not guarantee your child's success in LEGO programming, although it will give him unlimited access to work in any odd hours of the day.

35) What is there to do before receiving a FLL field kit or the start of the September season?

There are plenty of upfront work that can be done independent of having the field mat and knowing the exact season challenge before September. Each team can set up their team meeting scheduling, logo design, building a FLL table, doing some project research related to the challenge theme, go on related field trip, participate in different team bonding activities, and learning the basics of robot building and programming by working through the training tutorial during the summer.

36) How do I register for a qualifying tournament?

You will receive an email notification and instruction on how to register for one qualifying event on or before October. Go to <http://usfirst.org/whatsgoingon.aspx> to select the event you want and register online. Due to limited space and to be fair, only one FLL qualifying event is allowed and will be counted per team.

37) How do I register for a State tournament?

For NJ, if your team is well rounded and wins a first place award in one of the top categories at the regional qualifier, then you will receive instruction for signing up for the State tournament.

38) Are all FLL teams required to compete in a tournament?

No, teams are not required to compete in any tournament, but it is strongly encouraged that all LRC teams (competitive or non-competitive teams) to register and compete in one qualifier tournament. This will set a deadline for completing the challenges, and also provide a valuable experience to see what a tournament is like, and what other teams are doing. There is never enough time to be 100 % ready in about 10 weeks. However, every team is on the same boat. Participate in an event can really cement the interest in FIRST and get a chance to meet all other FLL enthusiasts. It is the process of learning and doing that are most important to LRC.

39) What if my team did not win at a regional event, now what?

Go to the State Championship tournament and cheer for your favorite team, and get a no pressure tour of the event site, check out all other teams' project and robots. What could be better than finally understand what the robots are doing on the tables and what constitute a good and a great project if you haven't worked on one yourself? Go take notes, make friends and enjoy the craziness without stress!

40) Is there any off-season activity that my team can do?

Most FLL team meets from September to December, then pack it up until the next season. However, the best teams always take the off-season months to "sharpen their axes" by continue in team training, participate in other science and robotics competitions, conduct outreach events, and fundraising. Come next September, while most other FLL teams are trying to remember how to navigate the NXT-G program, these extended training team are way ahead of the curve already.



**Livingston Robotics Club (LRC)  
FIRST Lego League (FLL)**

**What and Where to Buy the Robotic Kits**

**Option #1**

LEGO Mindstorms Education NXT Base set, \$280

[http://www.legoeducation.us/eng/product/lego\\_mindstorms\\_education\\_nxt\\_base\\_set/2095](http://www.legoeducation.us/eng/product/lego_mindstorms_education_nxt_base_set/2095)

(This kit includes the 1 light, 1 sound (not often useful), 1 ultrasonic, and 2 touch sensors. The rechargeable lithium battery and DC charger is included but not the NXT-G program and license)

Plus

LEGO Mindstorms Education NXT Software 2.1, \$80

[http://www.legoeducation.us/eng/product/lego\\_mindstorms\\_education\\_nxt\\_software\\_2\\_1/2240](http://www.legoeducation.us/eng/product/lego_mindstorms_education_nxt_software_2_1/2240)

Plus

LEGO Mindstorms Education Resource Set \$100

[http://www.legoeducation.us/eng/product/lego\\_mindstorms\\_education\\_resource\\_set/2214](http://www.legoeducation.us/eng/product/lego_mindstorms_education_resource_set/2214)

**Option #2**

LEGO Mindstorms NXT 2.0 Retail Set \$260

[http://www.amazon.com/LEGO-4544091-Mindstorms-NXT-2-0/dp/B001USHRYI/ref=sr\\_1\\_1?ie=UTF8&qid=1308078756&sr=8-1](http://www.amazon.com/LEGO-4544091-Mindstorms-NXT-2-0/dp/B001USHRYI/ref=sr_1_1?ie=UTF8&qid=1308078756&sr=8-1)

(This kit includes 1 color, 1 ultrasonic, and 2 touch sensors, but not the widely used light sensor. It includes the NXT-G software program and license v2.0 (but not the latest v2.1), it does not include the rechargeable lithium battery)

Plus

LEGO Mindstorms Education Resource set \$100

[http://www.legoeducation.us/eng/product/lego\\_mindstorms\\_education\\_resource\\_set/2214](http://www.legoeducation.us/eng/product/lego_mindstorms_education_resource_set/2214)

Plus

Rechargeable batteries and Charger (choose one; disposable batteries are not recommended by LRC)

- 1) [NXT Rechargeable DC Battery](#) W979693, \$55 + [DC Charger](#), \$25
- 2) [NXT DC Rechargeable Battery](#), \$55 + [LEGO Power Functions Transformer 10VDC](#) Charger, \$25
- 3) NiMH Batteries, 2650mAh, AA size, 8 batteries per pack DC1500 (from Amazon.com)  
Duracell CEF90NC 30 Minute Charger with 4 AA NiMH Rechargeable Batteries (\$20 from Amazon.com)
- 4) Eneloop rechargeable batteries with 14-hr charger (Costco)

**Additional Equipments:**

- **A laptop:** for robot programming and doing team research.
- **A fishing [tackle box](#)** for all the spare parts.



**Livingston Robotics Club (LRC)**  
**FIRST Lego League (FLL), 2011-2012 Season**  
**Related Websites**

The official US FIRST website:

<http://usfirst.org/>

The official FIRST LEGO League website:

<http://usfirst.org/roboticsprograms/fll/default.aspx?id=970>

The official FLL team registration:

<https://gofll.usfirst.org/>

The official FLL Forum:

<http://forums.usfirst.org/forumdisplay.php?f=24>

The Livingston Robotics Club website:

<http://livingstonrobotics.org/>

The LRC/Landroids FLL Resources:

<http://www.landroids.org/related-links/first-lego-league-resources/>

The Landroids website (our founder team)

<http://www.landroids.org/>

The Landroids Facebook (our founder team)

<http://www.facebook.com/LANDROIDS?sk=wall>

The NJ FIRST website (to be moved soon to Mid-Atlanta Region FIRST)

<http://nycnjfirst.org/>

The NJ FIRST Facebook

<http://www.facebook.com/pages/NJ-FIRST/184060074074>