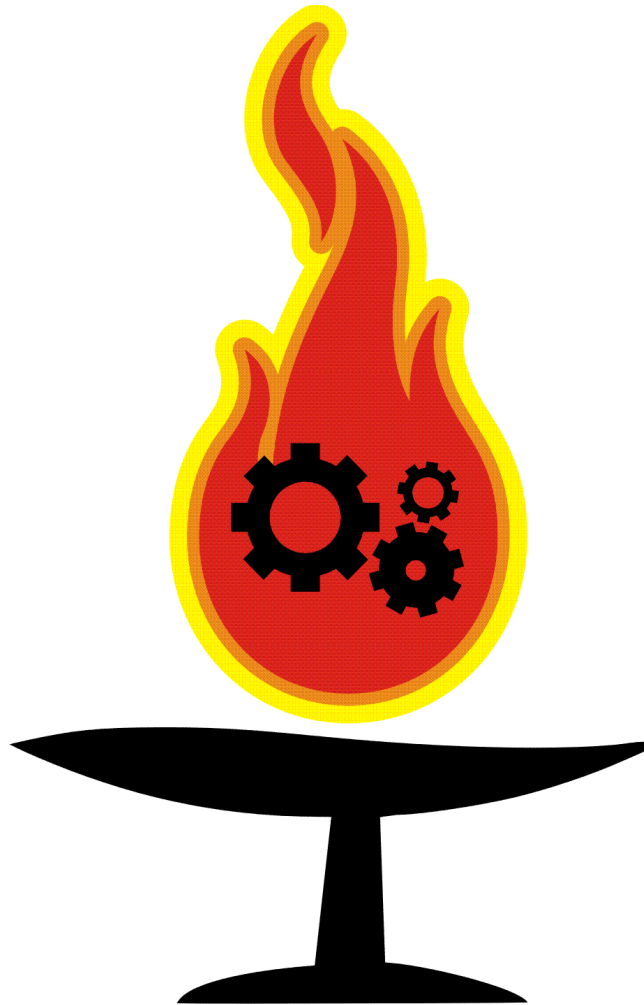


# **How to Start a Unitarian Universalist Youth Robotics Team**



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## **First, *WHY* start a Unitarian Universalist Robotics Team?**

Lots of good reasons, but here are some:

- It can bring an exciting new element to the youth programs at your church
- It's a great multigenerational activity, with all ages working toward common goals
- It gives our young people a chance to live our UU values 'out loud' in the larger community
- Unlike on sports teams, every young person on a robotics team can 'go pro' if they choose science or engineering as a career. This is especially important for women and minorities, who are often underrepresented in these fields.
- It gives our young people a chance to recognize they can make a difference in the real world, if they put forth effort.
- The team can be a source of pride and excitement for the congregation as a whole!

## Who Organizes the Competitions and What Are They About?



The competitions are organized by *FIRST* LEGO League.

*FIRST* LEGO League is part of the *FIRST* family of international robotics competitions. *FIRST* stands for 'For Inspiration and Recognition of Science and Technology', and is a 501(c) (3) not-for-profit public charity founded by inventor and entrepreneur Dean Kamen. Dean believes that technology can be a powerfully positive force in the world and that young people should have access to programs that promote that idea while providing opportunities to build science and technology abilities along with self-confidence, leadership, and life skills. More information about *FIRST* can be found here: <http://www.usfirst.org/>

In *FIRST* LEGO League (FLL), teams of up to 10 students, ages 9 to 14, have about eight weeks to design, build and program a LEGO based robot capable of autonomously completing a series of tasks within a specified period of time. At the end of the season, teams from the local area meet in a friendly, day long competition. In 2010, there were over 15,000 FLL team worldwide! Team are assembled from many different kinds of organizations; schools, churches, 4H clubs, Girl Scouts, homeschoolers, etc.

***FIRST* LEGO League is about much more than just the robot!** Each year the competition is based on a new 'challenge'. The challenge deals with some problem the world is facing in which technology may be part of the solution. Previous challenges have been centered on such topics as protecting the world's oceans, using energy efficiently, helping people with disabilities, and solving the special challenges of cities.



**The challenge for the 2011 season is called ‘Food Factor’ and deals with how we might be able to improve the quality of food worldwide by finding ways to prevent food contamination.**

How a team’s robot performs on the playing field represents only 25% of their total score. Other factors include their teamwork, how well they can describe the robot technically, and how well they do on their project presentation.

During the season, teams will be researching and developing a ‘real-world’ solution to a problem presented by the challenge, which is then presented to a panel of judges, usually in the form of a skit or other creative work. The project presentation is independent of the ‘robot’ portion of the competition, and the solution the team presents to the project challenge does *not* need to include robotic elements.

## **Unitarian Universalism and Robotics?**

What could all this possibly have to do with Unitarian Universalism? Surprisingly, a great deal! Teams can use the Seven Principles of Unitarian Universalism as a guide to what they do. Look at the principles below and how they fit:

### **The inherent worth and dignity of every person**

Teams are encouraged to show respect for everyone they come across – other team members, their coaches, their community, volunteers at events, and the members of other teams. No trash-talking or put downs of other teams or individuals is allowed.

### **Justice, equity and compassion in human relations**

Teams don't learn about technology just to learn about technology. They learn about technology to understand how it can be used to make people's lives better. Technology doesn't have all the answers, but it can be an important tool when used properly – and this means putting people first. Look at past LEGO League season challenges – helping people with disabilities, studying climate change, reducing energy usage – and you can see that equity and compassion are underlying themes.

### **Acceptance of one another and encouragement to spiritual growth in our congregations**

Hopefully, team membership should reflect the diversity of your congregation and beyond. For the team from First Unitarian Universalist Society of Exeter (FUUSE), a student doesn't even need to be a Unitarian Universalist to join. We provide a seat at the table for everyone who is willing to commit to the ideals of the team. Also, we attempt to relate our discussions of current events in technology back to the Seven Principles.

## **A free and responsible search for truth and meaning**

Education is a key goal for teams, but not just education in technology. The team from FUUSE invests a great deal of time in discussing and learning about personal virtues and group dynamics. This has led to some very interesting group sessions. We don't always agree on what is true, but we insist on open discussions and respect for all participants.

## **The right of conscience and the use of the democratic process within our congregations and in society at large**

The team from FUUSE strives to make decisions by consensus whenever possible. This means we try to avoid voting on decisions, because voting creates winners and losers, and often leaves underlying issues unresolved (as least in the losers' minds). We make decisions by discussing them under the guidance of the coaches and older students, until we hopefully get to the point where all team members can at least 'live with' the direction the group at large seems to be going. This takes lots of time and energy, and not all decisions are made this way, but we feel it leads to better results in the long run.

## **The goal of world community with peace, liberty, and justice for all**

Past LEGO League season challenges have been global in scope, and often incorporate social justice themes. Students learn about communities and their roles in them, beginning with their local community and reaching outward.

## **Respect for the interdependent web of all existence of which we are a part**

Teams deal with interdependent systems of all kinds - their team, their robot, their congregation, their community, and of course the system represented by the LEGO League season challenge, which often has a global reach. Once again, looking at past season challenges, you can see the interdependent web of existence is a common theme!

# How to Start A Team

## Step 1: Find a Champion



Starting a *FIRST* Lego League (FLL) team is like any other project – you will need a champion to take the ball and run with it. This champion will likely end up being lead coach for the team.

He or she does not need any special technical training! Many successful FLL teams are led by folks with no science or engineering

background. You will find the students on the team quickly become the technical experts, and the kit and software you get as part of registering comes with great, step-by-step tutorials that will get everyone up to speed quickly. You may discover, though, that the folks most interested in starting a team like this are scientists or engineers themselves.

One thing your champion does need, however, is a passion for making this happen and the time available to invest. The season starts in September, and usually culminates with a friendly, day-long competition in November or December, depending on the competition schedule. It's hard to say how much time it will take to get the team going, but in season, the lead coach can expect to spend about 5 or 6 hours per week coordinating and at team meetings over the (approximately) 8 week season.

## **Step 2: Think About What Your Team Will be ‘About’**



Think hard about the foundation you want to lay for your team. The Seven Principles are a great start. What are your other core values? Character? Community service? Using technology to help the disadvantaged? The more certain you are of the direction you wish to take the team, the more cohesive the team will be and the more everyone will get out of it. It's OK for this direction to shift as you learn more about the FLL experience and the participants on your team, but you should always be keeping in mind your core identity.

## **Step 3: Think About a Workspace**



The space doesn't need to be finalized at this point, but you do need to consider it. You will need space large enough for a 4' x 8' playing field, at least one additional work table, a laptop or two, and a place to store your robot and building elements.

The playing field, which you will need to build, can be set up and taken down for each meeting, but it's much more convenient to be able to leave it in place, as it can be cumbersome. The playing field only needs to be built once, your first year. Each year you will get a new field mat as part of your registration, which is specific to that year's challenge. The mat is just rolled out in place on the playing field, and populated with LEGO elements the team will build.

Having a workspace at church is ideal, if you have the room. If not, you may be able to meet in a team member's or coach's basement.

## Step 4: Recruit Team Members and Additional Coaches



Advertise in your newsletters, order of service inserts, posters, and any other way that reaches members of your congregation to get the word out. Hold an 'Information Night' for parents and potential team members, and show them an FLL overview video. A good one can be found here:

<http://www.youtube.com/watch?v=6p8AzRtpw6w>

This is a few years old, but gives a really good overview of the entire process in only about 7 minutes.

You can recruit students who will be from 4<sup>th</sup> grade to 8<sup>th</sup> grade when the challenge is released in September. Technically most 9<sup>th</sup> graders are still young enough to participate per the rules, but you may find they are moving on to other things at that age. You can have up to 10 students on one team, and as few as 3.

Stress that being on an FLL team is like being on a sports team at school: it's a significant commitment. Students and coaches find FLL teams **very** rewarding, but it does take some effort.

Most teams meet about twice per week during the season, for about 2 hours per meeting. Meetings can be scheduled whenever they are mutually convenient.

Even if you have overwhelming response to your recruitment campaign, you should strongly resist the urge to start two teams at the same time. It is extraordinarily taxing to attempt to run two teams at the same time, even for veteran coaches. If you have this strong a response, one suggestion would be to take the older applicants first, and keep the

younger ones on a standby list. Older members have fewer years left before they 'age out' of the program. Also, most teams lose one or two members during the season, either because other obligations intrude, or they find out FLL is just not for them. This allows standby members to be brought in to the team as room is made.

While you are recruiting team members, you should also recruit additional coaches. It would be ideal to have one coach for every three student members or so. Parents often volunteer to help coach, and they can be ideal. Remember, coaches don't need to be technically oriented, although it helps. Much 'coach' work consists of just helping the students keep on track and acting as a sounding board.

### **Step 5: Find the Money**



Wait! Shouldn't you have found out where the money was going to come from before you got this far? Not necessarily. You've probably had some thought to where the money would be coming from before you reach this step, but it's easier to raise money for an actual team, with real students associated with it, than for the 'idea' of a team.

If the experience at FUUSE is typical, you will find fundraising fairly easy. Several members of our congregation who owned businesses stepped forward with contributions – some without even being asked! Of course, they were rewarded with prominent mention on our team t-shirts. You may also find that parents of team members work for businesses that are able to support this kind of project. For the first four years of its existence, Team FUUSEion used no church funds for team support. We did a few fundraisers on our own, and requested donations from businesses, and were able to meet our needs that way. For the 2011 season, the church will be covering a portion of our expenses. This was at the request of church leadership, who see the team as something in which they want to be investing.

The minimum expense you can expect for your first season is about \$800. This assumes very basic equipment, home-made team t-shirts, and a borrowed laptop. A more typical amount would be \$1,000. This would allow you to upgrade to professionally printed t-shirts.

Follow-on years will likely cost less, as the FLL Robot Set you will have purchased the first year for about \$400 or so can be re-used year after year. You may find yourself wanting more than one robot set so your team may be more easily broken in to groups to work on things, but this is not a requirement.

### **Step 6: Register Your Team**



Register your team by going to this site:

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

Note that the registration process will require you to enter a team name, but this can be changed later! One of the things you should do at your first team meeting is start working on team names.

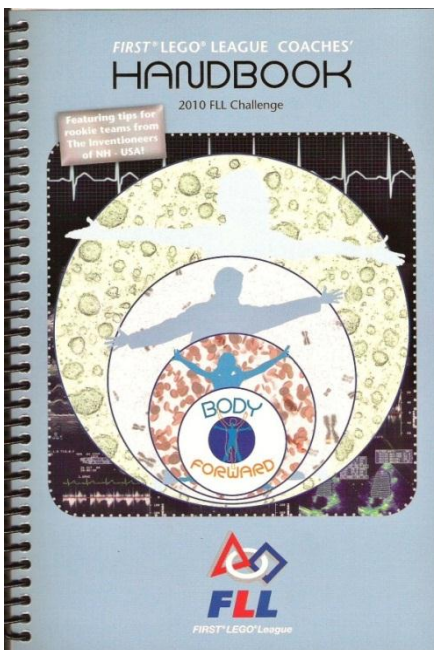
## Step 7: The Hard (and the Rewarding) Part



Once you've laid the foundation for your team in the early steps, it's time to start thinking about the season itself.

There are many, many good resources to help guide you through the season. A common complaint is that there are **too many** resources! A full discussion of how to run a team and what a season is like is well beyond the scope of this booklet, but here are the best resources to get you started:

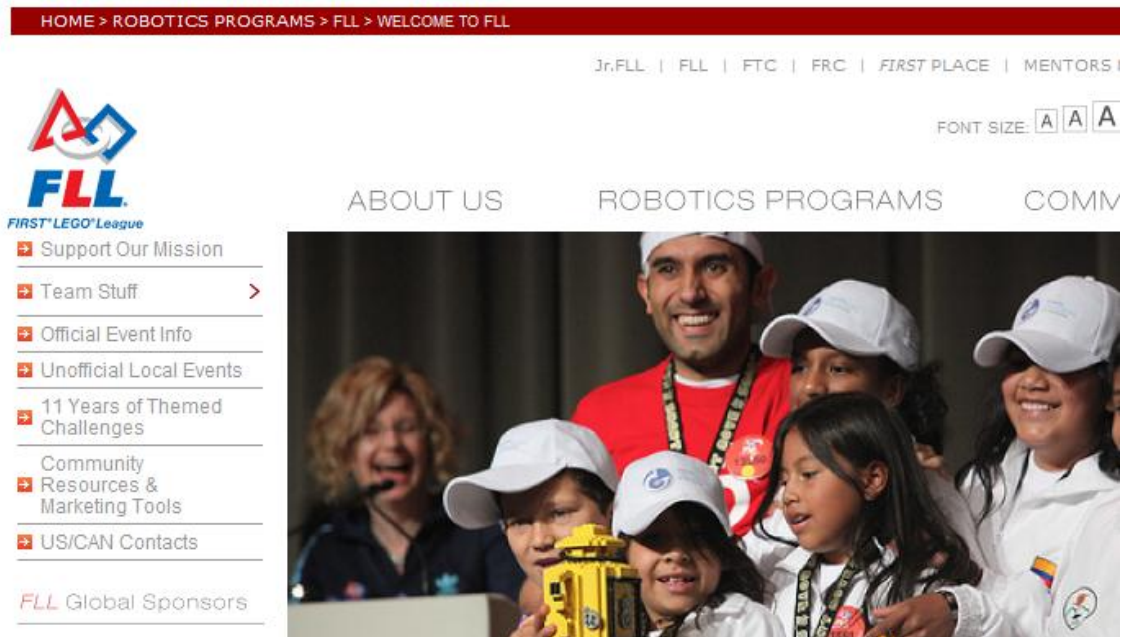
- The *FIRST*LEGO League Coaches' Handbook



This handbook is updated every year. The image to the left is for the 2010 version. It comes with the kit you receive after registration. This will give you all the basics you need to start, and should be read cover-to-cover. You can find the first few chapters, along with some other key information, online here:

<http://www.firstlegoleague.org/what-is-fll/twocol.aspx?id=251>

- The FIRST LEGO League Website



This is the primary website for official information, and includes indispensable information and advice. Especially pay attention to the menu item labeled 'Team Stuff' on the left side of the site. Find it here:

[www.usfirst.org/fll](http://www.usfirst.org/fll)

- The TechBrick Website



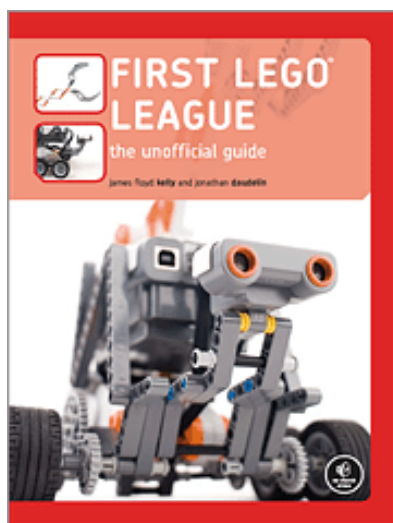
Probably one of the most important unofficial FLL sites out there. Lots of great downloadable resources for teams. Find it here: [www.techbrick.com](http://www.techbrick.com)

- The Team FUUSEion Website



The Team FUUSEion website has links to this document and many others specifically designed to help Unitarian Universalist robotics teams. Click on the 'Click Here to Learn How to Start a Team' link to learn more. Find it here: <http://www.uurobotics.org>.

- FIRST LEGO League: The Unofficial Guide



A great in-depth book on FLL. Unlike the *FIRST LEGO League Coaches' Handbook* above, this one goes in to some detail on how to build and program a robot! Find it here on Amazon: <http://www.amazon.com/First-LEGO-League-Unofficial-Guide/dp/1593271859>

- Technology Resource Set



This is probably the first set of LEGO parts you will want to pick up to add to the basic robot kit you purchase when you register your team. Lots of axles, gears, and wheels your team will want to use, and reasonably priced at about \$80, considering it contains over 1,000 pieces. You are not likely to find it in stores, but you can buy it

here: <http://www.legoeducation.us/store/detail.aspx?ID=340&bhcp=1>

## Conclusion

Many people find getting involved with a youth robotics team one of the most rewarding things they have ever done. The journey is not an easy one, but that's part of the reason it has the impact it does, on the students, the coaches, and the community.

If you have any questions at all, please feel free to contact Frank Merrick at [merrick@earthlink.net](mailto:merrick@earthlink.net) or (603)679-2524.