

**Thirteen Frequently Asked Questions about
Oregon Robotics Tournament and Outreach Program (ORTOP) – www.ortop.org
and FIRST LEGO League (FLL) – www.firstlegoleague.org**

1. How does this program relate to traditional classroom instruction?

Building a robot from a LEGO kit and programming it helps students develop communication skills, critical thinking, problem solving and teamwork skills. In addition they gain a hands-on understanding of geometry, physics and the scientific method of investigation.

2. I'm comfortable with kids, but building and programming a robot sounds pretty complicated. Or, I can deal with gears and motors but I'm not so sure I can deal with a bunch of kids.

A FIRST LEGO League coach is an adult who organizes the team, arranges for meeting times and spaces, takes care of the paperwork and acts as the contact person for the team. We don't expect a coach to advise the team on technical matters, although some do. Coaches do help teams with organizational and teamwork skills.

A FIRST LEGO League technical mentor is an adult or high school student who helps a team learn about gears, motors, programming a robot using a simple graphical language, etc. They often rely another person – the coach – to organize the team, deal with parents, meeting locations, etc.

3. I don't know anything about the program. Is there training available?

Yes, training is available. ORTOP offers free beginning and intermediate evening workshops to show you how to get started. These classes will be offered in Portland and locations in the Willamette Valley from late spring to early fall. Videotapes are also available. Another option would be a three- or five-day professional development class in LEGO Robotics. These classes are offered by the Software Association of Oregon Foundation in association with the Computer Science Teachers Association. They will be held at Hillsboro High School and Western Oregon University. More information is available at www.superquest.org.

4. Who teaches the technical aspects of building and programming the robot?

It's easier than you think. Teams usually begin by assembling a robot from plans similar to ordinary LEGO kits. The programming is picture based -- select the needed pictures and connect them in a logical order to accomplish a task. Many teams have a second adult advisor, who may be technical professional who acts as the team's technical mentor. Sometimes this person is a parent but often it is a community volunteer. ORTOP will assist in helping you find a technical mentor for your team. Or, if you'd like to be a technical mentor, we'll help you find you a team that needs a mentor.

5. This sounds like a great program but I don't think I'm the right person to lead help lead a team. What else could I do to help?

We suggest that you share the information we've sent you with teachers, school principals, the PTA or PTO, selected parents, educational assistants or other community members. Although a few teachers have entire classrooms of students participating in teams, most ORTOP teams participate as an after-school activity organized by a parent, youth organization or school staff member. Let others know about this program. Identify and encourage a parent or someone else to organize a team at your school.

6. What equipment would a team need to get started and how much does it cost?

First-year teams spend about \$700 to get started. This covers a LEGO robotics kit plus registration fees, the annual challenge kit, and materials to build a competition board. Teams also need access to a computer. The second year a team's costs will be about \$350. Details can be found at www.ortop.org/FLLTeamBudget.pdf

7. How are teams funded? Are there any scholarships?

Teams are funded from a combination of sources: parents, business sponsors, PTA, from the school budget, after-school activity funds, community organizations and ORTOP scholarships. ORTOP grants full and partial scholarships. A simple two-page application is available at www.ortop.org/scholarship.html and the scholarship committee reviews applications monthly.

8. Where do teams meet?

Classrooms, school cafeterias, team members' homes, church basements, conference rooms of businesses to name a few. Anywhere there is space for the 4'x 8' board, a computer, four to ten students and a few adults is acceptable.

9. How do I know which students to recruit?

Over the past three years, students with different backgrounds, learning styles and interests have successfully participated in the program. How well a student excels at math and science is not necessarily a predictor of success. Just like a real engineering team, these teams need a variety of skills. This program has a way of igniting interest in science and math and cultivating teamwork skills. Any child that is interested, wants to try, and is willing to respect the equipment and his/her teammates should be given an opportunity to participate. Although some may view this as a "boys" activity, nothing could be further from the truth. Almost 500 girls participated in the program last year. ORTOP especially encourages girls, under represented minority students, students from economically disadvantaged localities and rural areas to participate.

10. What is the time schedule for the tournament season?

Teams can form anytime before the end of September. Spring is a good time to form a team. Some teams choose to meet earlier than the fall to begin learning basic skills and having fun experimenting with their robot. The actual FLL registration begins in May and ends in September. Most teams begin to meet when school starts. The FLL tournament challenge is released in mid-September. The team sets a schedule of weekly or bi-weekly meetings to work on their robot design, programming and research presentation. In early December, the team competes at a local tournament. We expect to have 15 or more tournaments all around Oregon including Corvallis, La Grande, Klamath Falls, and Roseburg as well as several in the greater Portland area. About 20% of the teams from the local tournaments will be invited to the state tournament held in January.

11. What is the FLL Tournament Challenge?

A panel of leading educators, engineers and scientists design the annual international FLL Challenge. Briefly, the challenge consists of two parts: the robot game and the research assignment. In the months leading up to the tournament, teams design and build a robot and program it to compete on the challenge board for the robot game. The challenge board is a 4' x 8' printed mat with LEGO structures placed in specific locations. The structures are the challenge missions. The robot will push, pull, and lift to deliver and retrieve items to and from the structures in a set time limit. In addition, the team prepares a 5-minute research presentation on the challenge theme. Last year the theme was Mars exploration; in 2004 it was about assuring access for people with physical disabilities. In 2005 it is about the world's oceans. Additional information about the FLL Challenge is located at www.firstlegoleague.org

12. What happens at the tournament?

Teams are judged in four different categories; the robot game, technical interview, presentation interview and teamwork. Teams compete on the challenge board and are awarded points for successfully completing missions. Teams also appear before two judging panels: research presentation judges and technical judges. The panels assess what the teams accomplished and learned as well as their teamwork skills. At the tournament, numerous trophies are awarded to celebrate the many ways that teams can succeed.

13. So why is it important for students to be involved in an engineering program in elementary and middle school?

Students will tell you it's fun and it's cool when you can get the robot to work. The program gives students a chance to experience real-world engineering and science research at a challenging but age appropriate level. It also develops problem solving and critical thinking skills that are needed to pursue any endeavor. We need to encourage more students to pursue high paying, rewarding science and technology careers. Those that choose other careers will still benefit from the insights they gain and teamwork skills they build.

Recently a participating educator explained the importance of the program this way. If students interested in basketball were only allowed to dribble the ball in elementary school, participate in passing drills in middle school and shoot the ball in high school but were never allowed to play in a game, how interested would they in basketball? We tell students if they want to be an engineer to study hard in their math and science classes, they can pursue a technical career someday. But how do they know if they would enjoy such a career? Up until now there have been few opportunities to experience what it is like to be part of an engineering team. Participating on a FIRST LEGO League team gives them just that opportunity.