



Linden Robotics

FIRST Robotics Competition 3568

FIRST Tech Challenge 7031

FIRST LEGO League Challenge 30463



Roboegles – Battle Blazers – LEGO Eagles

2022/2023 Season

Student, Parent and Mentor Handbook

Introduction

Linden Robotics strives to inspire and prepare our students to become the skilled workforce, leaders, and technologically literate citizens of tomorrow. We are part of the FIRST Robotics family which provides an accessible and innovative program that builds self-confidence, knowledge, and life skills, while motivating young people to pursue opportunities in science, technology and engineering.

This document outlines the expectations and criteria for participation on Linden's FIRST Robotics teams.

About FIRST

FIRST (For Inspiration and Recognition of Science and Technology) is a non-profit, educational organization that was founded in 1989 to inspire and excite young people about science and technology by bringing together professional mentors with high school students from around the country. Dean Kamen, founder of FIRST, imagines a day when the act of invention - that is, the work of scientists, engineers, and technologists - is as revered in the popular culture as music, athletics and entertainment are today. The FIRST vision is to inspire in young people, their schools and their communities, an appreciation of science and technology and an understanding that mastering these skills can enrich the lives of all.

The FIRST Robotics program provides students of all ages with an opportunity for hands-on experience in solving real-world problems. Student teams work with corporate and community sponsors to brainstorm, design, build, test, and compete with their robots. The process inspires students to learn more about science, math and technology, and to develop an enthusiasm for further studies in engineering and the sciences. The competition challenges teams of students and their mentors to design and build a robot in a set timeframe, using a standard "kit-of-parts." The team has to analyze the game and strategize what type of robot would perform well. The goal isn't simply to build a robot;

the robot is just the vehicle for learning. The real goal is building a collaborative team, a supportive community, and a solid strategy for problem-solving during the competition.

For more information about FIRST, visit their website at <https://www.firstinspires.org/>

Linden Robotics History

FIRST Robotics began at LHS in 2011 when Team 3568, the Linden **RoboEagles**, was formed. The team has always met on evenings and weekends to provide students the opportunity to learn about, get involved in, and develop a passion for technology, science and math. The FTC (Middle School) program was formed in 2013, Team 7031 the Linden **Battle Blazers**, and the name of the program was changed to **Linden Robotics**. In May of 2017 the program expanded to include the Upper Elementary aged students, by forming the two FLL teams, the Linden **LEGO Eagles**. That was followed by the formation of six FLL Jr. teams, the Linden **LEGO Eaglets** in 2018.

In late 2019 the world changed with Covid-19. This global pandemic shutdown the world and unfortunately the robotics program was directly affected as well. The newly formed FLL and FLL Jr. programs went away. Luckily the interest in robotics within the community weathered the pandemic and a STEM curriculum was incorporated in the elementary schools for the 2021-2022 school year.

Overview of a Typical Season

A typical year for Linden Robotics can be divided into 3 parts: the FLL Jr., FLL, and FTC Seasons (overlapping), the FRC Season and the Off-Season. FLL Jr. and FLL starts in August and runs through December, FTC runs September through December, and FRC kicks-off in January and wraps up in April. May through July is considered our off-season and that's when we train the team. We learn things like Mechanical, Electrical and Pneumatic concepts, Programming, Team Building, First Aid and CPR.

A typical FIRST season can see up to \$50,000 in expenditures from District registrations and events, off-season events, team uniforms and supplies, and the purchase of the many mechanical and electrical parts required to build the robot. Students are expected to participate in all sponsorship and fundraising activities.

Students are also asked to make every effort to attend the weekly meetings. It is however understandable if students are involved in other activities and cannot make all of the team meetings. We will make an earnest effort to accommodate schedules when able. That said, attendance may become a deciding factor if, or when, a limited number of students are allowed to attend events.

School academics always take precedence over all extracurricular activities. If a youth member is struggling to maintain their grades, please let one of the coaches know and we might be able to arrange tutoring. Students with failing grades in any subject will not be able to attend any Linden Robotics related events.

FLL Season

Each year in late August, FIRST LEGO League releases a new Challenge for teams that focuses on a scientific topic. Each Challenge has three parts: the Robot Game, the Project, and FIRST LEGO League Core Values.

Project - Teams are challenged to learn more about the science behind the real-world Challenge theme, then use their creativity to design a solution (or modify an existing solution) to solve the problem.

Robot Game - The teams are required to build and program an autonomous (no remote control) LEGO MINDSTORMS robot that can perform theme-based “mission” tasks on a table-top playing field. The missions require the robot to navigate, capture, transport, or deliver objects. The more missions completed, the more points teams earn.

Core Values - While teams work on the Project and Robot Game, they are guided by the FIRST LEGO League Core Values. This set of values is what makes our Program so special. Teams are encouraged to compete like crazy but still respect their teammates, Coaches, and even help their “competitors.” Our most important Core Value is “Have FUN!”

The FLL competition season usually spans from October through the end of the calendar year. The complete FLL season ends in April with the FIRST Championship Houston and FIRST Championship St. Louis World Festivals.

FTC Season

The team begins meeting more frequently in September with the FTC Kickoff, usually the first weekend back from summer vacation. Meetings are held 3 times a week usually from 6:00 - 8:00 pm, and occasionally Saturdays are added depending on the progress of the robot build. During these meetings the team will develop a game strategy, brainstorm ideas, prototype parts and build their robot. FTC Typically competes in two Regional competitions each season, followed by Super-Regional and World competitions if earned.

A unique aspect of the FTC program is the Engineering Notebook and now the Engineering Portfolio. The team must document everything they do over the course of the season. Everything from deciding their game strategy, to brainstorming, prototyping and testing, building and improving their design, and the lessons they learned along the way. Not only do they have to document their robot build, they also have to explain what they do around their community and how they promote STEM and FIRST robotics. The Engineering Portfolio summarizes the Engineering Notebook and the course that the team took from beginning to end. It is presented to a panel of judges, along with a presentation, in an attempt to win various awards.

FRC Season

The FRC build Season begins on “Kick-Off Saturday”. This is typically the first or second Saturday in January, in which FIRST announces the game challenge for the season. The team assembles locally to watch the game reveal and collect the “Kit-of-Parts”.

From Kickoff until their first competition, the team will meet three or more days a week (Saturday if required). Subgroups (mechanical, electrical, software, business, strategy and integration) may meet at different schedules from each other. Once the overall strategy is agreed upon, each of the subgroups will be responsible to design, create, and test their portion of the selected design.

The robot must be finished within the first four weeks or so of the season, followed by a week of Autonomous development, and finally the drivers, operators and human players get an opportunity to practice driving and develop their game strategy. In addition to building the robot, the team will also be responsible for the construction of a practice field and game elements.

At a minimum, meetings will occur on Tuesdays, Wednesdays and Thursdays (6:00 pm – 8:00 pm) and Saturdays (9 am – 5 pm). Subgroups will determine their own appropriate days to meet.

FRC competes in at least two Qualifying events each season. Our guaranteed home event is usually at Kettering University, and the second event is chosen based on availability. We try to stay within a 1 – 1 ½ hour distance from Linden. The events start on Thursday night when the team sets up their pit area and gets the robot inspected (5 pm – 10 pm). Friday they are excused from school and compete all day, usually 7am – 9 pm. Saturday they finish their qualifying matches and move on to the playoffs. By the end of the night an alliance of three teams is crowned the winner of the event. The event concludes with an awards ceremony (7 am – 7 pm).

Off-Season Spring

The Linden Robotics team off-season begins at the conclusion of the final event of their season. At that point, the team will only meet every Tuesday from 6:00 pm – 8:00 pm. The student members will then determine what projects, tasks or events they want to work on to achieve their goals. (Linden Robotics is a student led activity, with adult mentor oversight. All activities must be approved by the coaches and parent committee. Determination will be made based on the team budget and mentor support.)

Team Organization, Roles and Responsibilities

The most important element of participating on the team is not the time commitment but the commitment to complete a task. When asked to accept a responsibility, team members are expected to see it to its completion. The effects of a critical task being delayed can be catastrophic, given the short time period involved.

All team members shall attend scheduled “All Hands” meetings, every effort will be made to coordinate these meetings with the overall project requirements as well as the member’s individual school and work schedules. A communication network will be established, E-mail and our website will

be the prime means of communication, although other means will also play a role. A list of all team members' phone numbers and email addresses will be assembled.

The team is composed of both students and adults (mentors and parents). The following outlines the prerequisites and participation guidelines for both student and adult members of the teams. Some of these prerequisites and participation elements are shared; others are unique to each audience. Students and adults are to abide by the guidelines during all FIRST team activities and events. Failure to abide by these rules may result in the inability to attend competitions or possibly suspension from the team.

ALL Team Member Responsibilities:

- Commitment to complete a task in a timely manner
- Commitment to work weeknights and weekends during the build cycle for a minimum of three days per week unless excused by the coaches
- Active participation on the team
- Students/Parents are responsible for transportation to and from school and other specified events, carpooling is encouraged whenever possible
- Behave in a positive manner; uphold the Gracious Professionalism motto, keeping the team's best interest in mind when meeting with the team or while out in the community
- Communications is critical to the success of this team, team members are responsible for checking their email and our website
- Treat all team and LHS equipment with respect and care, any damages must be reported immediately to Coaches/Mentors
- Any personal injuries must be reported to the Coaches/Mentors
- Agreement to wear the team "uniform" at competitions and other team events
- Participation in fundraising efforts
- Read and acknowledge you understand the **Linden Robotics Team Membership Agreement**

Student Participation and Responsibilities include:

Working with adult mentors, students design and build a fully functional robot to perform the tasks required of the competition. Students learn about, and participate in, one or several aspects of the robot's production such as, machining, prototyping, building, wiring, programming, and controls. Likewise, some students may also contribute by working on a video, yearbook, website design, Chairman's Award, finance, and marketing.

- Maintain passing grades in all classes
- Commitment to secure school assignments and make-up work impacted by competitive events or team activities
- Uphold FIRST's Gracious Professionalism
- Attend all meetings that are considered "All-Hands" meetings/events

- Attend meetings in addition to “all-hands” meeting in support of the chosen subgroup
- During the critical last weeks of the build season meetings will be held every day

Adult Participation and Responsibilities Include:

Acting in a mature and responsible manner, adults mentor the students throughout the course of the project. The role of the adults is to challenge the students to achieve their very best and to instill in them the sense that their potential is limitless. This is accomplished by demonstrating that science and technology can be fun and exciting through the building of the robot, along with spirit and media activities. Throughout the FIRST experience adults are required to abide by all school policies.

- Mentors should read and become familiar with FIRST’s Mentoring Guide which provides information and tips on being a facilitator, roles of mentors and students, providing feedback, and various mentoring tools
- The philosophy of a Linden Robotics mentor: A mentor should always be alongside or behind the student, never in front... It’s THEIR robot
- Mentors should always be the example for appropriate behavior, team work, problem solving techniques, and Gracious Professionalism
- Parents of student members are asked to assist the team in any of the following means:
 - Act as a Mentor
 - Provide transportation of their child(ren) to team meetings
 - Actively participate on the parent committee
- Adult mentors may be one of the following:
 - A faculty or staff member of Linden Schools
 - A parent of a student on the team
 - An outside participant approved by FIRST and the team leaders

Expected Behavior for All

Gracious Professionalism is the only acceptable behavior for all team members. As a team member, each student and adult represents Linden Community Schools, Linden Robotics, our sponsors, and the FIRST organization. Whether one is involved in events within the local community or at FIRST Robotics events, each individual’s behavior is representative of their team as well as the FIRST organization. All team members will be gracious, helpful, supportive, and will demonstrate sportsmanship in victory and defeat. Team members will display support of the objectives of the FIRST program. For these reasons, these expectations must be taken seriously.

Gracious Professionalism includes:

- Respect for the feelings, opinions and lifestyles of others team members
- Respect for facilities, tools and equipment
- Best behavior at all times
- Good sportsmanship

- A positive attitude
- A clean vocabulary
- Friendly and polite at all times to all persons and robots
- Electronics are not allowed at team meetings or the events, phones are allowed for emergencies only
- Gambling is not allowed
- Open displays of affection are not allowed, inappropriate behavior will not be tolerated

Fundraising and Competition Expenses

Fundraising is very important to the functioning of the team and team-building. We need corporate/community sponsors who will help fund costs such as registration fees for the competitions, tools, supplies, and other items necessary for the team to operate. We may also run other fundraising events to help defray other costs such as uniforms and traveling expenses.

- Although some expenses are subsidized students are responsible for some competition expenses, these may include transportation, meals, incidentals, and general spending money
- All students are expected to participate in organized fundraisers, the profits will be used to subsidize student/team expenses
- Students experiencing difficulty with expenses are encouraged to speak to one of the lead mentors, NO student will be denied team participation due solely to financial constraints

Team Materials

- Any building materials, tools and all “Kit of Parts” items are not to leave the team’s building unless authorized by the team leaders
- All team members will be provided with team uniforms (shirts), it’s the student’s responsibility to keep team uniforms in good condition and wear them at events
- Students are solely responsible for lost, damaged or stolen items

Alcohol, Tobacco, and Drug Use

The team will not tolerate the illegal use of alcohol, tobacco, or illegal substances. All team members are to abide by all national, local, and school laws regarding these items. Students violating these laws will be removed from the team.

Academic Probation

Academics take priority over participation in FIRST. Students will maintain a passing grade in all classes at all times. If a student is having difficulties in any class, they may ask for help from any team mentor or student. This can be done at team meetings where there are many students and adults available to assist in homework or studying for tests and quizzes. If a student is not passing prior to an event, the

student must notify the lead mentor and will be placed on academic probation. All team members on academic probation will only be allowed to attend Saturday meetings until all grades are passing.

Disciplinary Action

Should a violation of the team rules occur, the student will be put on probation or removed from the team. These conditions can be temporary or permanent and will be evaluated on a case-by case basis by the Lead Mentor. A student can be put on probation, suspended from the team, or removed from the team by violating a combination of (or by violating one significantly) of the following criteria:

- Students must exhibit Gracious Professionalism at all times (meetings, competitions, and events)
- Students are expected to behave in a manner that portrays the team favorably amongst a professional community while at competition and/or wearing the team uniform (team shirt)
- Students must maintain passing grades (a 'C-' or better) in ALL classes
- Students must attend all all-hands meetings during the season
- Students must be productive members of the team during meetings
- Students must abide by all rules in this handbook

Violation of one of these does not mean automatic disciplinary action unless it is a gross violation. If disciplinary action is necessary, students will be placed into one of two categories based on severity and prior disciplinary action. Students can redeem themselves and be promoted to a less harsh category if they show significant improvement. The categories are:

1. Probation
2. Suspension from the team

These can be permanent conditions if a severe event caused the student being placed there and significant improvement was not shown for a prolonged time. Situations will be evaluated by the Lead Mentor on a case-by-case basis.

Probation:

- The student can only attend competitions if the team shirt is not worn and must find separate transportation from the team, and the team will not be responsible for supervision of the student while at the event
- A student on academic probation can only attend Saturday all-hands meetings

Suspension:

- The student is NOT allowed to wear the team shirt to LHS, events, or competitions
- The student cannot write that they are on a FIRST Robotics team for any time spent on suspension (for example, if a student is a member for one year then suspended, they can still count that one year, but no further)

- The student CANNOT attend a competition EXCEPT as a spectator and therefore cannot go into the team pit or sit with the team except with other team spectators (like parents, for example)
- The student is not allowed to attend any team meetings

Basically, a student who is suspended has privileges equal to any person who is not a member of the team in regards to the team except they cannot join the team again unless they have shown SIGNIFICANT improvement and have requested to rejoin. If improvement is shown, they will be put on probation until enough improvement is shown to reinstate them as a full member of the team. All team members start out as full team members and it is not expected that this will be a significant issue.

Eligibility to Attend Competitions

All team members should plan to attend the District Competition. However, because of the travel costs involved, we may be limited in the number of students we can send to the Championship Competition in St. Louis and will only send a Travel Team. The determination of which students will be included in the Travel Team will be made by Linden Robotics Mentors and Parents Committee and will be dependent upon the following criteria:

- Written permission to attend by parents or guardian
- Passing grades during the previous marking period
- Review of any disciplinary action during the “in season” by the high school, the Team, and law enforcement
- Seniority (When the number of students are limited – seniors and those with the most years on the team will be given priority)
- Attendance at team meetings (This is important, and attendance will be taken)
- Gracious Professionalism shown throughout the year
- Participation level during pre-season meetings, building season and during competitions (Are you working hard or just hanging out?)
- Participation in fundraising events
- Critical Team members – members who may be the only student who can perform a specific and necessary task – critical to the success of the robot at the event
- Perform vital role for the team at competition (robot repair, driver, programmer, Chairman’s Award presenter)
- Respect for the rules outlined in this handbook

Transportation to/from Events

Students are responsible for their own transportation to the FIRST Robotics events. All students are required to attend the district events.