

The Warbotz
FRC TEAM 3694
North Atlanta High School
4111 Northside Parkway
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THE WARBOTZ

2017-2018 TEAM MANUAL
A Guide to the Inner Workings of FRC Team 3694



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FIRST & FRC Competition

FIRST Robotics is an organization founded by Dean Kamen, most popularly known as the inventor of the Segway, in 1989. In Mr. Kamen's own words, "The whole process here is to convince you that you will determine your own destiny." His goal is to inspire young people to enter fields of math and science and to emphasize that not just sports and the arts should be glorified. **FIRST** offers four competitions for four different age groups. The high school age group, FRC, has 3,000-plus active teams, with approximately 30 in our area. For more information, please visit the **FIRST** website, <http://www.firstinspires.org/>

The **FIRST** Robotics Competition challenges teams of students and their Mentors to design and build a robot to meet a specific challenge in a six-week timeframe, using a standard "kit of parts". The team has to analyze the game and strategize what type of robot would perform well. Typically teams meet months in advance of the building period to learn basic skills and be better prepared. The goal isn't simply to build a robot; the robot is a vehicle for learning much more. The real goal is building a collaborative team, a supportive community and a solid strategy for problem solving during the competition.

Team Welcome

We are the Warbotz, **FIRST** Team 3694. Established in October 2010, we are a student led, organized, run, and self-promoted team. To the largest extent possible the students are completely responsible for the organization and operation of the team. Assisted by adult Mentors, the Warbotz participate in the FIRST Robotics Competition; support the FIRST LEGO Team at Sutton Middle School; and work to support the Scientific, Technical, Engineering, and Math (STEM) educational programs of the Atlanta area school systems. In this coming year we are planning to mentor the Sarah Smith Elementary School FLL teams and to assist the Sutton Middle School FTC team, in addition to creating, sponsoring, and mentoring FLL teams at other elementary schools that eventually feed in to North Atlanta.

Mission Statement

The Warbotz are a student run, organized, and promoted organization that aims to create, spread, and foster the growth of interest in STEM and business fields within both our fellow students and our community. This mission is best summarized using the acronym **FIRST** (Focused, Innovative, Respectful, Sustainable, and Teamwork.) We consider these values of the **FIRST** program key in being the team we strive to be.

Team Goals

As said in our mission statement, our goal is to create, spread, and foster the growth of interest in STEM and Business fields within both our fellow students and our communities. During this coming 2017-2018 School year, we plan to do this by implementing a well-defined training program for first year FRC students on our team. This program will allow students an opportunity to learn the basics of every aspect of a functional robotics team, and then make an educated choice as to which aspect they would like to pursue in more depth. These creates the opportunity for students gain a greater understanding of the overall team and in turn to understand that we are not limited to building robots, but that we also have a large business aspect.

Team History

The team was started in October of 2010 by current alumnus Dylan Diamond with only a table in the library and a short lesson on how gears work. Only six people showed up to the first meeting, but as the weeks went by, more people began to show an interest in the team. Gradually, we began expanding and spreading the word of the opportunities of **FIRST** and more people with many different talents began to join. As a result, the Warbotz have been incredibly diverse in nearly every aspect since the very beginning.

Even as a nearly seven-year-old team, we are still relatively young in many circles. Despite this, our team members have been acquiring quintessential life skills since day one, including, but not limited to learning to plan our projects, meet deadlines, and overcome challenges such as discovering at the last minute that our shipping crate for our robot was too small and build a new one, *fast*. Regarding the importance of meeting deadlines each year during our build season, we have six weeks to build a fully functional robot to compete in a brand new game released by **FIRST** each year. At midnight on the last day of those six weeks, our robot must be bagged and we are not allowed to touch it again until the day of competition.

Opening our first kit of parts for build season and sponsoring gifts from JC Penney was “like a second Christmas,” said Jalen Roberts, a team alumnus. There were boxes, tools, and things many of us didn’t yet know how to use. Throughout our nearly six years we have learned how to overcome challenges from design errors and miscalculations to bad timing and minor blizzards in which the city of Atlanta ceases to function. Even when school is postponed, or even simply not in session, like on Saturdays, **FIRST** slows for no one.

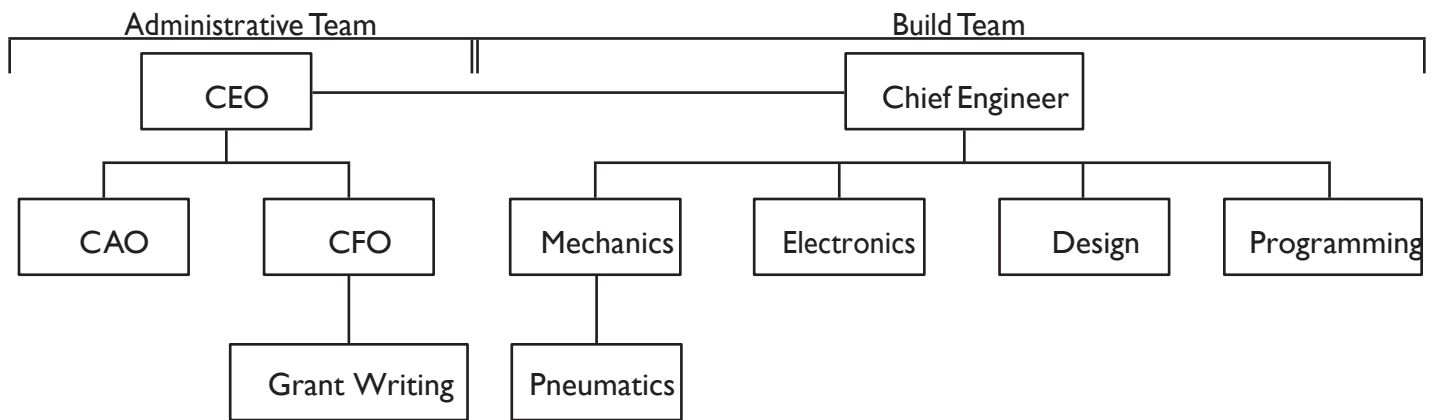
Team Communications

Slack-Slack is our main platform for day to day communications. You **MUST** sign up for this, as it is the only way for you to communicate with the rest of the team as a whole. It is separated into different sections, called Channels. Each channel has its own purpose. The *#General* channel is for team-wide announcements and questions. The *#Updates* channel is for telling the team what you did that day.

Everything in Slack that is not related directly to the team and/or robot development will be censored. The one exception to this is the *#Random* channel, where you can post most things, as long as they are not offensive, demeaning, or otherwise not in the spirit of *Gracious Professionalism*. Abuse of this resource may lead to consequences.

Email- Email is used for some official communications. Each student and their parent is required to maintain an email address and to check it often, or when directed by a Slack message. Emails will be used for communicating official notices and team related information. Students will be held responsible for information communicated through official Warbotz emails.

General Organizational Structure



Elected and Appointed Positions

The Warbotz is a student centric and student led organization. With the assistance of the team Mentors, students provide the team organization and leadership. In support of this philosophy, the team has both elected and appointed leadership positions. Currently the elected positions are the CEO, and Chief Engineer, who appoint their cabinets – Chief Administrative Officer (CAO), Chief Financial Officer (CFO) and Chief Engineer. The Chief Engineer selects and appoints his/her supporting staff – Chief of Mechanics, Design, Electronics, Programming and other supporting positions. For each appointed chief there is a respective sub-team. The job descriptions are as follows. In addition to these tasks, all student leaders are expected to teach any and all interested students the knowledge needed to be successful in these positions. Each student's primary task is to train their replacement.

Elected Positions

Chief Executive Officer (CEO): The CEO is the overall head of the team. This student is responsible for the overall leadership and representation of the team. They are also responsible for appointing the CAO and CFO. Specific duties include, but are not limited to:

- Represent the team in official activities
- Develop and enforce team schedule
- Maintain team order and discipline
- Communicating all important information to the team, assuring all team members are informed of team activities
- Maintaining communication with the school
- Coordinate Warbotz activities with other teams
- Assist in the development of grant submissions and present them for Mentor approval
- Managing the CFO and CAO and their respective sub-teams
- Other duties, as assigned by the team Mentors

Chief Engineer: The Chief Engineer has the overall responsibility for the technical activities of the team. build division of the team. This position student manages any robot related projects going on and is responsible for appointing the Chiefs of Mechanics, Electronics, Design, Programming, Pneumatics, and specific Project Managers, as required to accomplish the tasks the team decides to tackle. Specific duties include, but are not limited to:

- Technical leadership of the team
- Develop and enforce build team schedule
- Managing all sub-teams in the build division of the team
- Developing, documenting, and maintaining the “integrity” of the robot’s design
- Assisting in the development, tracking, and enforcement of the team’s budget
- Gathering the necessary technical records and documentation of the robot required for submission as part of the competition, in support of the CAO
- Other duties, as assigned by the team Mentors or the CEO

Appointed Positions

Chief Administrative Officer (CAO): The CAO is responsible for the administrative management of the team in support of the CEO. They are in charge of correspondence with outside parties and developing and producing the various submissions and documentation required by the competitions the team participates in and any award submissions the team chooses to pursue. Specific duties include:

- Writing, mailing, and maintaining a record file of all official correspondence for the team.
- Maintaining the team roster, contact list, and records.
- Preparation and submission of all competition required documentation.
- Preparation and submission of the applications and documentation required by any award the team decides to pursue.
- Maintaining all Social Media accounts
- Coordinating and planning fundraising events and efforts with the CFO
- Other duties, as assigned by the team Mentors or the CEO

Chief Financial Officer (CFO): The CFO is responsible for all financial aspects of the team. sub-team may be formed to assist this officer in any tasks. Specific duties include, but are not limited to:

- Developing a sound financial budget
- Tracking team expenses and maintaining the financial records
- Developing and submitting grant and sponsorship requests.
- Representing the team at associated presentations to potential sponsors.
- Coordinating and planning fundraising events and efforts with the CAO
- Other duties, as assigned by the team Mentors, the CEO, or the CAO

Chief Mechanic: The Chief Mechanics is responsible for the general implementation of the design of the robot. They coordinate their efforts with the Chief Designer and the robot build sub-teams so that each robot produced by the Warbotz is functional. Specific duties include, but are not limited to:

- Basic machine construction and development, to include rapid prototyping of mechanisms
- Maintaining a complete and accurate Bill of Materials for all projects
- Prepare lists of required materials and supplies and coordinate with the Chief Engineer for submission to Mentors for procurement
- Assist CFO in tracking and maintaining team budget

Chief Electrician: The Chief Electrician is responsible design and implementation of robots electrical systems. They often work with design and programming to make sure each project is operational. Specific duties include, but are not limited to:

- Basic machine electrical systems construction
- Integration of sensors and feedback devices to allow the machine to achieve its design goals
- Maintaining a complete and accurate Bill of Materials for all projects
- Maintaining a complete and accurate wiring diagram, wire list, and other documentation required by each project
- Prepare lists of required materials and supplies and coordinate with the Chief Engineer for submission to Mentors for procurement
- Assist CFO in tracking and maintaining team budget
- Other duties, as assigned by the team Mentors, the CEO, or the Chief Engineer

Chief Designer: The Chief Designer is responsible for designing and overseeing the design of all projects robots built by the Warbotz. They often work in tandem with each of the other chiefs to maintain the overall feasibility of the project. Specific duties include, but are not limited to:

- Establishing the major parameters of the design of any Warbotz project
- Maintaining documentation of a project as the design evolves during the construction process
- Maintaining a complete and accurate Bill of Materials for all projects
- Communicating design requirements to the appropriate sub-team
- Prepare lists of required materials and supplies and coordinate with the Chief Engineer for submission to Mentors for procurement
- Assist CFO in tracking and maintaining team budget
- Other duties, as assigned by the team Mentors, the CEO, or the Chief Engineer

Chief Programmer: The Chief Programmer is responsible for the development and documentation of all software required to support the operation of a Warbotz project, in accordance with the design concept selected by the team. The Chief Programmer coordinates with the design and electronics chiefs to create a functional robot. Specific duties include, but are not limited to:

- Developing – and documenting - the software needed to control and operate all Warbotz projects, as required by the selected design concept the design of any Warbotz project
- Maintaining documentation of a project as the design evolves during the construction process
- Communicating design requirements to the appropriate sub-teams, especially w\motor and wire lists to the construction and electrical sub-teams
- Prepare lists of required materials and supplies and coordinate with the Chief Engineer for submission to Mentors for procurement
- Maintaining team computer hardware, with the approval of the appropriate team Mentor
- Assist CAO with maintaining and revising the team's web site with up to date, relevant information
- Other duties, as assigned by the team Mentors, the CEO, or the Chief Engineer

Pneumatic Chief: If the project is appropriate for the use of pneumatics in accomplishing the design goals of a project, the Chief Mechanic may appoint a Pneumatic Chief. The Pneumatic Chief is responsible for the pneumatic systems on the robots. The Chief is responsible for the design and build of all pneumatic parts on the robot. Specific duties include, but are not limited to:

- Developing the design of a pneumatic system to accomplish the requirements of the design concept of any Warbotz project
- Maintaining documentation of a project as the design evolves during the construction process
- Communicating design requirements to the appropriate sub-teams, in particular, the construction and electrical sub-teams
- Prepare lists of required materials and supplies and coordinate with the Chief Engineer for submission to Mentors for procurement
- Other duties, as assigned by the team Mentors, the CEO, or the Chief Engineer

Project Manager: Some tasks the Warbotz elect to undertake may require additional management or oversight. At the discretion of the team leadership, a Project Manager may be appointed to accomplish a specific task. Functioning very much like a Chief, but with a scope limited to a specific task, the Project Manager is responsible for the successful accomplishment of that task. Specific duties include, but are not limited to:

- Managing the project assigned
- Maintaining documentation of the project
- Communicating design requirements to the appropriate sub-teams
- Prepare lists of required materials and supplies and coordinate with the Chief Engineer for submission to Mentors for procurement
- Other duties, as assigned by the team Mentors, the CEO, or the Chief Engineer

Committees

For the safety and well-being of the Warbotz there are certain groups that have been and can be formed to maintain order, discipline, and overall fairness.

Suspension & Expulsion

If a team member is not acting in accordance to the student contract at any point they will be given one clear warning. If said student continues to behave in a manner not acceptable to the standards of the Warbotz, a meeting can be convened between the Mentors and their sub-team Chief, the team leadership (CEO, CAO, CFO, Chief Engineer), as appropriate to evaluate the situation. The student will be given notice a minimum of twenty-four hours in advance of the meeting at which the decision will be made and said student will be given a fair chance to state their case. If they do not show up to state their case it will be taken into account and the decision will not be postponed. This group will make a disciplinary decision, which may include the suspension or expulsion of the student from the Warbotz.

Impeachment Committee

If at any point, one of the team leaders, elected or appointed, becomes detrimental to the team, either through their actions or by failing to properly fulfill the duties of their office, the Impeachment Committee may convene and vote to discipline or remove said student from office. The Impeachment Committee shall consist of the team Mentors and all of the remaining elected leadership and appointed Chiefs. Before said vote, the student leader in question will be given a fair chance to state their case. If the majority of the committee votes against the student leader, said student leader will be required to step down. In the case of impeachment of an elected student leader, the entire team will vote to elect a new Chief.

Students

Each team member is expected to uphold certain standards and contribute the overall success of the team. Most of these expectations have already been stated in the student contract. The fact that they have now been publically stated twice indicates that they warrant strong consideration. These expectations include, but are not limited to:

- Attendance of team meetings and activities and contribution in a positive manner – mere attendance is not sufficient. All regular meetings will begin at 3:50 PM and end at approximately 5:30 unless otherwise stated. Students who constantly arrive late or leave early will cease receiving credit for attendance. Meeting duration may be extended for some members during the build season (early January 3 to mid-February) and during the competition season (March through April). All students are expected to attend meetings until the end of the school year. Robotics does not end after competition.
- The exhibition of *gracious professionalism* toward each other, peers, adults, and mentors.
- Compliance with the requests of authority. (i.e., Chiefs, teachers, mentors, school officials, POTUS.) If there is an issue, please settle it with the person in question privately. There will be consequences for childish attempting to involve various team members in your disagreement. If you cannot come to an adequate resolution with the person, the next step would be to either ask the CEO or Chief Engineer to run interference.
- Respecting their environment, including the team's and other's belongings.
- Showing appropriate team spirit. Bad sportsmanship will not be tolerated, and not supporting the team is nearly a criminal offense.
- Checking all communication platforms often. They will allow the entire team to stay well connected and well informed.
- Enjoying the time we spend together as a team. As a team we work hard and play hard and love spreading our enjoyment of the team. Don't be intimidated, the truth is you can handle it.

The benefits associated with being a part of the Warbotz and an FRC are plentiful. Some of these are listed below.

- Eligible for travel to Championship Competition with the team
- Eligible for participation in Peachtree District competition events
- Eligible for any group leadership positions
- Eligible to receive all Sponsor or FIRST supplied items
- Eligible to attend all additional Team Field Trips
- Eligible to attend remote site Kick-off event
- Eligible to receive School Academic Letter (after 2 years of Service)

Mentors

Mentors are extremely helpful in the day to day and overall functioning of the team. They provide guidance and teach the students most of the basic skills. Below are the few expectations we have of our mentors. The list is so short because our goal is to become as self-sufficient as possible. We strive to have a team that runs on student taught students.

- Guide and instruct the students in a safe and respectful manner.
- Encourage independence, competence, and creativity in the students.

Parents

Parents are generally expected to be aware of and involved in team activities. While we try to be as self-sufficient as possible, most of us still can't drive ourselves, much less other people to events. Also, many of us don't have incomes and we need food. For those of you who are brand new to FRC teams, we spend the majority of our free time working to improve our team and it cannot be put into words how grateful we are when a parent walks in with sodas for the fridge or food to snack on.

Safety

Safety is a majorly emphasized part of any FRC team due to our use of power tool and other machinery. It is extremely important that each student does their best to follow all safety measures set in place by any authority. One of these authorities is the student we refer to as our "Safety Czar." This student is appointed by the Chiefs and is tasked with making sure the team remains uninjured and safe. Some general safety policies include, but are not limited to:

- Know where the First Aid Kit is at ALL times. If you do not know, ask one of your team mates.
- Watch what you're doing - losing a hand to the miter saw is no fun.
- Understand how to operate the tools correctly and safely before use.
- When operating machines or being around others using machine tools, wear safety glasses. (We don't care what they look like...wearing them is better than having an eye patch.)
- Tie back long hair. Getting it caught in the cordless drill is a pain.
- Wear closed toed shoes. Things fall, get dropped, and thrown.
- Report all accidents, no matter how small.
- Bend knees when lifting heavy things; back injuries are a pain.
- Be careful where you put the Loc-Tite - the stuff sticks.
- Intentional harm to a teammate is forbidden and will be dealt with severely.
- Pay attention to the Safety Czar and the Mentors. Their job is to keep you alive and healthy. Their requests are usually reasonable and should be heeded without hesitation.
- Keep ALL work spaces clean.
- Again, use common sense. (i.e. Don't put flammable things near the Dremel or stick your hand under a moving drill press.)

Behavior Policy

On the Warbotz, behavior is extremely important. You are a representative of the team and **FIRST**, both in the school and in the public community. If you act severely in contrast to any policies set by the team, you will be subject to disciplinary action, possibly to include indefinite suspension or even expulsion from the team. Our basic behavioral policies are listed below.

- Put things back where you found them. This way, you and others can find them next time.
- Clean up after yourself. No one is going to do it for you. Please put all food trash in the garbage. Your teammates will not thank you for attracting insects and rodents, or sticky spots on the floor and counters.
- Gluing things to the whiteboard is NOT a good idea. This should be fairly self-explanatory.
- People may not always realize that they've made a mistake. Try and be nice pointing it out to them. (Being nice usually produces better results than criticism.)
- Think before you speak

- Take everything with a grain of salt. A room full of teenagers tends to be accompanied by sarcasm.
- Music is not strictly prohibited, but the volume must be kept down. Ear buds are not allowed in the machine room where they can be damaged, and your hearing is essential, and other areas deemed inappropriate by the Mentors. Shared music is subject to criticism, since we all have to listen to it. (Various artists are prohibited.)
- Attempted sabotage of team projects (or members) will result in severe consequences. If you need something, don't be afraid to ask. We're all in this together.

Some basic guidelines to help maintain the peace and a safe and organized workspace include:

- If you open it, YOU close it.
- If you turn it on, YOU turn it off.
- If you unlock it, YOU lock it.
- If you break it, YOU fix it.
- If you can't fix it, YOU report it to someone who can.
- If you borrow it, YOU return it.
- If you use it, YOU take care of it.
- If you make a mess, YOU clean it up.
- If you move it, YOU put it back where it belongs.
- If you make a promise/commitment, YOU keep that promise/commitment.
- If you don't know how it works, YOU don't touch it.
- If it doesn't concern you, YOU don't mess with it.

General Garage Rules

1. No power tools allowed without adult supervision.
2. Do not play with any tools.
3. Cleanup your work area and put away any tools you were using.
4. Always wear safety glasses when using power tools.
5. Do not cause damage or desecrate APS or Team equipment or property.
6. Do not take anything from the build room unless told so.
7. Always ask for help if something if you don't know how to do it.
8. Do not run in the build room.
9. Do not waste build room supplies on personal projects.
10. Always have something to do if you don't have something to do you can ask for a task.
11. Do not distract people who are busy with a task.

A General Reminder: Warbotz membership is a privilege that can be revoked at any time.

Travel and Competition

Traveling with the team is a privilege. Members who have contributed the most will be given priority. Members travelling with the team will be expected to be on their best behavior at all times. For events that we do not take all of our members, a list will be made and communicated minimum ten days in advance to the event. For overnight events a list will be available two weeks in advance. During many events, the entire team will not attend the entire time.

For events that require parental supervision (most of them) we greatly appreciate and encourage volunteers. As stated before, we do try to be as self-sufficient as possible; however we still often require parental and adult assistance.

Finances

Team dues per year are one hundred dollars (\$100) per student. For students joining the team, there is a \$10 assessment for the 1st semester's insurance coverage. All active students' insurance coverage will be renewed in January and is included in the team fees. This fee covers insurance and a t-shirt for each new team member. We strive to fund most every other team cost is funded by our fundraising efforts. If a student is unable to pay the yearly fee, an exception may be made if their parents talks with the team Mentor, CEO, or CFO.

Calendar

A calendar will be published on the team site and kept as up to date as possible. Included in each student's packet will be the tentative plan for the first twelve and a half weeks of operation. The packet will also include a list of essential dates that the student **MUST** be present. They will be few and far in between but are considered mandatory unless the student has a serious familial or health related issue. If there is an alternate issue, discuss it with the CEO.

Forms

Students are responsible for returning all forms in a timely fashion if they wish to attend any robotics activities. For most off-campus activities some form of permission slip is required. The initial forms include:

- Student Contract
- Parent Contract
- Insurance Forms

All required forms are available in an electronic format and may be downloaded from a link on the team's website - warbotz.org/docs.html