

# ***Chanhasen Stormbots Team Handbook***

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***2017-2018 Season***



*At the Stormbots, we value hard work.*

The sets of rules and expectations that follow in this manual are to ensure that hard work, focus, progress, and safety remain key priorities of every meeting.

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# INTRO TO FIRST

FIRST stands for:

**F**or **I**nspiration and **R**ecognition of **S**cience and **T**echnology

FIRST Mission Statement:

"To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology leaders."

- Dean Kamen, Founder, US FIRST

FIRST's mission is 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, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership ([www.usfirst.org](http://www.usfirst.org)).

## TEAM MISSION

Team 4778's FIRST Mission Statement:

We want to create a fun, productive, and collaborative work environment for team members, represent our team and school at competitions with pride as well as uphold the values of FIRST and promote STEM and engineering in our community.

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## TEAM ORGANIZATION

As a team, the Stormbots have a fairly standard organization. The initial two groups are the mentors and the students. The students on the team are then organized into departments. At the top of the chain is Team Captain, who oversees all activities, checks in on department heads, and is in charge of organizing meetings and events. Right beneath the Captain are the department heads. Each of the four department heads (Finance, Manufacturing, Build, and Communications) are in charge of their respective departments. In some of the departments, there are sub-departments. This is anything from Programming (under Build), Marketing (between Finance and Comms), and Scouting (under build). Each of these sub-departments have their own heads, who run their group of students, but still report to the main department head.

At the end of each season, should a department head or captain graduate, that person will select a candidate as the next in line, which will be approved by the rest of the leadership/mentors. (Captain's candidates need to be approved by the whole team) At the beginning of each new season, students will be split up into their requested departments. Requests will be made in a survey, and the team will do its best to accommodate everyone's request. If a department is too big or too small, we will have to move people around to ensure a balanced team. As a part of a department, you will meet with the department head at the

beginning of each meeting, where daily and weekly objectives will be laid out and tasks will be delegated. We ask that everyone treats their department head with the same respect they would give a teacher, as well as honor every request. If there is an issue with a department head, bring it up with a head mentor or the team captain and the issue will be dealt with.

## TEAM DEPARTMENTS

These “subteams” are not mutually exclusive, and any given member participates in multiple subteams throughout the season.

### **BUILD & DESIGN**

- Collects brainstorming design ideas from entire team
- Creates prototypes for initial design thoughts
- Designs robot’s structure, drive-train, and manipulators
- Creates and updates CAD models of the robot
- Machines and assembles the robot and any other necessary parts
- Keeps track of design rules and robot weight throughout the build season to make sure that the robot will pass inspection

### **ELECTRONICS & SENSORS**

- Responsible for attaching and wiring the electronics necessary for the control system
- Responsible for checking the safety of wiring and electronics on the robot and other projects, although the Safety Captain will also check
- Communicates the electronics set-up to the programming team
- Communicates with the build & design team about mechanical constraints for electronics

### **PROGRAMMING**

- Develops and updates the programs for the control system using Java or C++

### **PIT & FIELD**

- Builds any field elements required for practice driving
- Coordinates with the Southwest Hub and builds any field elements required for setting up a full field for use at Week Zero
- Designs, assembles, and maintains organization of the pit

### **SAFETY**

- Makes sure all members follow proper safety procedures
- Checks the electronics for any exposed wires after the electronics team does a preliminary check
- Keeps track of major injuries

## **SCOUTING**

- Collects data from other teams at tournament, both from watching matches and from talking to team members
- If necessary, selects alliance partners based on the data collected

## **FINANCE**

- Contacts businesses for sponsorships and other events
- Organizes fundraising events (often coordinating with marketing)
- Creates and updates the team budget

## **MARKETING & GRAPHICS**

- Responsible for team communication
- Organizes outreach events (often coordinating with finance)
- Changes or creates new graphics as necessary
- Maintains team website and keeps it up to date, including the blog
- Updates team social media, including the Twitter and Instagram

# STUDENT ROLES

## **MANUFACTURING DIRECTOR**

The Manufacturing Director is in charge of keeping their department of “Build & Design” on task and on schedule to a finish a product within the deadline. All of the following positions report directly to this director:

### **PIT MANAGER**

The Pit Manager is responsible for the collection of tools and supplies owned by the Stormbots. They are in charge of the “Pit” workspace provided by the hosts of the various tournaments the team attends, making sure that the area is organized and that enough tools/supplies are brought from home. This job is done by their management of the Pit Crew.

### **SAFETY CAPTAIN**

The Safety Manager is in charge of general team safety both at the school and during competitions. They make sure all equipment precautions are followed and no one gets hurt, as well as helping the team meet safety requirements in the Pit.

### **TOURNAMENT SCOUTING MANAGER**

The Tournament Scouting Manager is responsible for managing the Scouting team. They delegate responsibilities within this team to build relationships with other teams at the tournament. This includes making scouting sheets to keep track of the other robots and drafting alliance possibilities.

## **FINANCE DIRECTOR**

The Finance Director is in charge of managing all of the team funds brought in by the Fundraising Team. This includes managing the team budget, ordering team purchases, and conducting expense control. They are assisted by the Finance Team. The following roles report to this director:

### **MARKETING DIRECTOR**

The Marketing Director is in charge of keeping their department of “Marketing & Graphics” on task and on schedule to reach fundraising/recruitment goals.

### **COMMUNICATIONS DIRECTOR**

The Communications Director is in charge of keeping their department of “Communications” on task and maintain good relations with sponsors and other teams.

## **MENTOR ROLES**

Stormbots Mentors play a vital role in the success of the Stormbots students & team. Mentors work extensively with team members during the build season designing, building, & fabricating a functional robot for competition. Their expertise is the catalyst for the team’s and students’ success. FRC Mentors are the major distinction between the FRC program and other robotic competitions, as they are wholly the professional role models for the students. Mentors engage & inspire students in ways that go far beyond science & technology. Every adult on the Stormbots team is a mentor simply because he or she leads through guidance & example. They enable both students & adults to appreciate the value of sportsmanship, teamwork, and Gracious Professionalism®. Mentors win when the students succeed. Mentors lose if the team does not learn how to persevere through adversity and build a solution that facilitates the team success!

## **ORGANIZATION AT COMPETITIONS**

### **BUILD TEAM**

Only build members selected for the pit crew will be allowed in the pit unless necessary.

### **DRIVE TEAM**

The drive team will be selected early in the season and will be driving in every match that the team is in. These members must get a good night’s sleep before the tournament.

### **PIT OCCUPANCY**

Only a handful of people will be allowed in the pit to maintain a clean and productive environment. Those people are the pit crew, drive team, one media member, two programmers, safety captain, and two mentors. Several of these people should occupy the pit only when required. Everyone else should be in the stands most of the day.

## **SCOUTING TEAM**

In order to effectively scout other teams, we will have several members scouting the pits on the first day of tournament. All throughout the tournament, certain members will be in the stands watching individual robots on the field during every match.

If a student is in none of the groups listed in this section, they are still required to be at the tournament, but they will be in the stands watching and cheering as we compete. They must also act professional and mature throughout the entire tournament.

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## **TEAM MEMBER EXPECTATIONS**

FIRST Robotics is about more than building a robot. It is about teamwork, business, fundraising, marketing and much more. Members of The Stormbots will find that they get out of robotics what they put into it. Thus, members are expected to attend non-meeting events such as outreach and fundraising. Participation in community service, training, and mentoring is also expected. While it is understood that academic obligations come first, social schedules may have to be rearranged in order for members to receive the full experience.

### **BEHAVIOR**

All members of The Stormbots are expected to behave maturely and professionally at all times, following the standards of Chanhassen High School. Disciplinary action will be distributed to those who fail to meet the standards. It is important for team members to remember that when they are engaged in any team- related activities, online or in person, they represent The Stormbots, and their actions will reflect on the team, mentors, sponsors, and Chanhassen High School. Additionally, members should treat teammates, members of other teams, and the general public with kindness and respect.

### **ATTENDANCE**

All team members are expected to take part in every team meeting for the entire duration unless one of the following conditions is true:

- The student has an appointment, extracurricular activity, meeting with a teacher after school, or other excusable conflict during the time of the meeting.
- The student has an excessive amount of homework, and must leave early.
- The student is sick the day of the meeting.
- The student is not needed the day of the meeting, or for the full duration of the meeting. This absence or early departure must first be cleared by a coach, captain, or mentor.
- The student has been asked to leave due to the distraction or injury of other members of the team.
- The student feels that they are not in the right mental state to attend and be productive.

All absences should be communicated in advance to the team captain, mentor, or coach either in person or by email.

## **BEING ON TASK**

Team members are expected to stay on task throughout the duration of the meeting. This means working on a robotics-related activity until the meeting has ended. Homework is permitted as long as any tasks assigned are on schedule to meet their appointed deadlines. Games and such are not permitted unless all current assigned tasks are completed, no other members need help, and finding more work has been discussed with department heads.

Furthermore, students that commit to a job at the beginning of the year are expected to keep and do that job as laid out in the description throughout the season. A team is only as dedicated as its individual members.

## **GAME RULES**

All team members are responsible for knowing the basic rules of the game released on kickoff day:

- Knowing field dimensions and location of scoring objects
- Knowing basic robot constraints
- Informing team members of rules when planning and building robot and component designs
- Checking weekly rule updates, and informing team members of any rule changes that have a major impact on the robot design
- Helping to complete the robot inspection checklist to make sure the robot will pass inspection

## **CONSEQUENCES**

Students that repeatedly decrease the overall productivity of the team will first be warned and then asked to leave if the behavior persists. This is to ensure optimal productivity and success for the Stormbots. Multiple instances of being asked to leave may result in dismissal from the team.

Disregard for safety rules including power tools may result in the privilege of using that particular tool being revoked. Deliberate injury of a member of the Stormbots, a member of another team, or any other person will cause an immediate dismissal from the team.

## **CLEAN-UP**

Some amount of time at the end of every meeting will be dedicated to cleaning our workspace. It is expected that every team member present does their part in leaving the room as clean as when we first entered.

## **ELIGIBILITY**

1. Students must be attending Chanhassen High School for the entirety of the build season through the tournament date (Transfer Policy)
2. Students must maintain a C average and be failing no classes (Adequate progress towards graduation)



3. Students must attend and participate in 50% of off-season team meetings and events. During build and competition season, students will be expected to attend more team meetings (around 75%) and commit more time.
4. Students must be on time and prepared to work. Students are also expected to have a positive attitude and help newer members.
5. Students must listen to mentors, other adult volunteers, and students with more experience on the team.
6. Students and parents must complete the necessary paperwork and pay the required fees on time, including travel fees and t-shirt costs.

## CODE OF CONDUCT

1. Students will display “Gracious Professionalism” at all times and promote the ideals of FIRST.
2. Students will not violate the racial, religious, harassment, violence, and hazing bylaws of the Minnesota State High School League (<http://www.mshsl.org/mshsl/index.asp>).
3. Students will behave courteously and cooperatively, particularly when in public spaces, visiting corporate offices, presenting to sponsors, and during outreach events and activities.
4. Students will respect others and will not endanger the health and safety of themselves or others.
5. Students will respect and help to maintain the facilities, tools, equipment, and other things used by the team.
6. Students shall not harass, bully, or otherwise put down other team members, students, or people in general in written, gestured, or verbal form. Internet, social media, and other online communications are team communications, and shall be regarded as such.
7. Those who are not members of the Stormbots but are cheering for or representing the team in any way, such as parents and friends, must adhere to these guidelines as well. This is not the Team’s Responsibility
8. Students will keep up to date with team events and requirements by checking the calendar and their email frequently, as well as attending meetings.

## LETTERING (COACH’S DECISION)

Just like any other Varsity sport, lettering is meant to recognize and distinguish outstanding team members and performances throughout a single robotics season. The goal of our lettering program is not only to give every team member a shot at lettering, but also to recognize team members for the hard work they put in. Therefore, the criteria is built to allow any student to letter, as long as they put in the work.

1. Participated in this year’s FRC season
2. Attended 75% of the mandatory meetings during build season (unless excused)
3. Attends 75% of the mandatory meetings during off season (unless excused)

4. Attended at least one regional competition for the year
5. Attends all of the fundraising events throughout the year (unless excused)
6. Attends 75% of the outreach events throughout the year (unless excused)
7. Actively participates at every meeting & event attended
  - a. This means following instructions, helping out when and where needed, and actively seeking out areas to assist once obligations have been fulfilled
  - b. Participation is judged by Department Head & reviewed by leadership and mentors at the end of the year
8. Embodies the principles of FIRST and the team
  - a. This is simply defined as doing what is right and being on your best behavior at all times. No matter where you are, you represent the team
9. Maintains progress toward graduation, with few to no missing assignments
  - a. Being an academic club, we put a high value on education. This means homework will always come before robotics
  - b. If any student is behind in school work, or needs to spend time working on homework, they can do that during robotics and still be counted for attendance and participation

To obtain a letter a team member must meet all of the above criteria, as well as go above & beyond what a “normal” teammate would. This decision is made at the end of the year during a meeting between leadership and head mentors. Each person is evaluated individually for their attendance, participation, and what they brought to the team that season.

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## TEAM TRAVEL

### QUALIFYING

To earn the right to travel with the team on long-distance trips such as the World Championship (if we qualify), students must complete many of the same requirements as lettering. Those requirements are:

1. Attends 75% of the mandatory meetings during build season (unless excused)
2. Attended 75% of the mandatory meetings during pre-season (unless excused)
3. Attends all of the fundraising events throughout the year (unless excused)
4. Attends 75% of the outreach events throughout the year (unless excused)
5. Actively participates at every meeting & event attended
  - a. This means following instructions, helping out when and where needed, and actively seeking out areas to assist once obligations have been fulfilled
  - b. Participation is judged by Department Head and reviewed by leadership and mentors before determining travel eligibility
6. Embodies the principles of FIRST and the team
  - a. This means doing what is right and being on your best behavior at all times
7. Maintains a C- grade average in classes, with few to no missing assignments

## SAFETY

1. At competition, general workplace safety rules still apply as well as any extra rules placed by the competition. Specifically, safety glasses are required at all times in the pits, practice field, and official field.
2. Students are expected to use the buddy system when leaving the hotel, competition arena, or anywhere else that the majority of the team is.
3. Students who own a cell phone are expected to keep it on them and charged. Students without a cell phone must buddy with someone who has one.

## FINANCE & PLANNING

The planning and organization for travel, especially overnight trips, is primarily done by the finance subteam, with some help from mentors and/or other adult volunteers.

## BEHAVIOR

It is expected of members to be positive and helpful during any team travel, including outreach. Members may find themselves with extra responsibilities during team travel, and should be prepared for such.

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# FUNDING & FINANCES

As an FRC team, the Stormbots obtain all of their funding from corporations, organizations, & fundraisers. This means that team members have to raise the money for the team to operate each season. Fundraising can come from events, such as Von Hanson's grill-outs and Davanni's fundraisers, or donations from outreach events such as Volksfest and holiday events. The majority of funding comes from donations from sponsors, which includes anything from small businesses to large corporations. These sponsors must be sought out and asked personally by team members, which is the main portion of fundraising we do.

The Stormbots operate with an annual budget of \$30,000 to \$40,000, which can be broken down as follows:

CATEGORY/ITEM	COST (\$)	DETAIL
Marketing Expenses		
T-Shirts	1,000	Team T-Shirts
Printing	300	Printing of game manuals, flyers, banners, and other marketing items
Promotional Items	500	Items to give to other teams and members of the community
Marketing Expenses (Total)	1,800	

CATEGORY/ITEM	COST (\$)	DETAIL
<b>Robot Build Expenses</b>		
<b>Competition Robot</b>		
Hardware	500	Nuts, bolts, screws, nails, etc.
Metals	500	Metal to machine parts, and aluminum tubing for the robot frame
Wood	150	For creating bumpers
Ordered Parts	3,000	Parts ordered online from various retailers
<b>Practice Robot</b>		A mirror of the comp. robot
Extra RoboRIO	435	A second controller for the second robot
Duplicate Parts	3,000	Parts duplicated from the primary robot
<b>Robot Build Expenses (Total)</b>	<b>7,585</b>	
<b>Other Expenses:</b>		
Tools	1,000	Wrenches, nut drivers, etc.
Pit Supplies	250	Repair parts, various materials
Practice Field Supplies	1,000	Materials for building the elements of the game field
Letters & Letterman Pins	225	
<b>Other Expenses (Total)</b>	<b>2,475</b>	
<b>Minneapolis Regional:</b>		North Star regional at the U of M
Registration	5,000	Tournament registration and robot kit of parts
Transportation	100	Bus transportation to and from the event
Practice Tournaments	500	Pre- and post-season practice tournaments
<b>Tournaments (Total)</b>	<b>5,600</b>	
<b>World Championships:</b>		
Registration	5,000	Tournament registration
Lodging	6,000	Hotel costs
Food	800	Food for team members/mentors
Transportation	3,500	Transport to and around Detroit
<b>World Championships (Total)</b>	<b>15,300</b>	
<b>TOTAL ESTIMATED BUDGET (Including Worlds)</b>	<b>32,760</b>	

# SAFETY

1. Team members are expected to be conscious of their safety AT ALL TIMES. This includes team-related activities including travel to team events and during competitions. Safety is the main priority of FIRST, and students should keep themselves and others safe.
2. Team members will be respectful of the Safety Captain(s) and adhere to any reasonable requests made by the Safety Captain(s) and team mentors
3. Team members are expected to report all injuries to the Safety Captain and log them in the safety log if it is requested of them.
4. Exercise caution, common sense, and good judgement when using tools. This helps to prevent accidents.
5. Power tools or equipment may only be used under the supervision of an adult mentor, even if the student using the power tool is OSHA certified. All tools must be used for the purpose intended, including hand tools. Using a tool for another purpose could damage the tool or injure students or mentors.
6. Students should not use any of the stationary machines in the metal, wood, or auto shops unless they have taken the “Materials & Engineering Processes” class or unless given explicit permission and instruction from a teacher.
7. Team members are required to wear safety glasses at work sites and in the pit area at all competitions. Team members are required to wear closed-heel and -toe shoes in work areas and at competitions. Crocs and sandals do not qualify. Furthermore, team members may be asked to wear gloves, face masks, and/or ear protection during certain tasks. All long hair should be tied back and members wearing very loose clothing may not be allowed to use some power tools.
8. Horseplay will not be tolerated at any time.
9. Nothing that goes in/on the robot is available for consumption at any time (e.g. lithium grease, loctite, aluminum shavings, etc.)
10. Keep food and drink away from the robot, particularly electronics.
11. All work areas will be cleaned up at the end of every day, especially any work area in Chanhassen High School. This includes sweeping or vacuuming floors, wiping off work surfaces, putting away tools and materials, and throwing away trash.
12. Students will not linger or socialize in the workshop once the designated tasks are completed.
13. Team members shall not directly or indirectly give out personal information about other team members while using any form of online communications or media. This includes all social media (Twitter, Facebook, etc.), FIRST-related forums (Chief Delphi), wikis, or any other formats.
14. As members of Team 4778, students’ communications through any media are representative of the team and should not negatively reflect on the team and should at all times reflect the ideals of FIRST and “Gracious Professionalism”.
15. Team members can talk to the Safety Captain, Team Captain, a mentor, or an older member of the team if they feel threatened, uncomfortable, or unsafe at any time. The Safety Captain, Team Captain, mentor, or older member will help the member in distress to the best of their ability or bring them to someone who can help more effectively.

# CALENDAR

September: FIRST releases its calendar of events and other season information. FRC fundraising and outreach take place.

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October-December: Weekly Team meetings occur in the robotics space. FTC teams organize their own meetings. FRC fundraising and outreach take place.

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January: FIRST has its kickoff event at the U of M. The game is revealed and build season begins.

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January-February: Build season. Meetings every night. Typical schedule is: Monday: 3-6. Tuesday: 3-8. Wednesday: 3-6. Thursday: 3-8. Friday: 3-(varies). The amount of hours increases as build season closes. Families will be asked to sign-up for bringing meals on Tuesdays and Thursdays when the meetings go late.

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February-April: Competition season. Duluth area tournaments take place in early March, then the Minneapolis area ones take place in late March. Worlds, which is held in Detroit, Michigan, takes place in late April.

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May: MSHSL State Championships take place in Minneapolis at the U of M.

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June-August: Weekly meetings. Community outreach and fundraising take place.

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## IMPORTANT DATES FOR THE 2018 SEASON:

- October 14, 2017 MRI Practice Tournament
- November 18, 2017 Minne Mini Regional
- January 6, 2018 FRC Season Kick-Off
- February 8, 2018 Chairman's Award Application Due
- February 20, 2018 Bag and Tag
- March 8-10, 2018 Duluth Regional Competitions
- March 29-31, 2018 North Star Regional Competition
- April 18-21, 2018 FRC Championship Event in Houston
- April 25-28, 2018 FRC Championship Event in Detroit
- May 19, 2018 MSHSL State Tournament