TEAM 972: IRON CLAW ROBOTICS

Official Team Handbook

Los Gatos High School
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An electronic version of this handbook is at:
https://handbook.ironclaw972.org/

TABLE OF CONTENTS

Program Overview

About This Manual

This handbook is intended to be a comprehensive document for team members, families, the FIRST community, and the public in general of how Team 972, Iron Claw, operates. It is intended to be as comprehensive as possible in regards to all our team policies and procedures, and enable transparency for all members to understand how we operate. This handbook is an open source document, and we welcome all people to view this and freely use any ideas presented herein as they see fit. If you do directly use language contained in this manual, and you would like to cite us, we would appreciate that!
Welcome!

About Us

Team 972 is a ***class*** and a ***team*** at Los Gatos High School (LGHS) that is comprised of LGHS students, adult mentors in the community, and school faculty. The team is focused on learning the aspects of functioning as a team, learning robotic engineering, and competing in the *FIRST* Robotics Competition. Each year the team has 6 to 9 weeks to design and build a 125 lb robot to compete in the yearly FIRST, FRC competition. In the process of designing, manufacturing, assembling, and testing a robot for competition, members of Team 972 learn and develop a wide variety of skills. These include, but are not limited to: technical skills (programming, CAD, manufacturing, assembly, and control systems), business operational skills (fundraising, marketing, budgeting, and logistics), and life skills (teamwork, leadership, communication, and project management).

The robotics year has three distinct windows during the school year: 1. Fall semester, when students focus on learning new tool skills and safety; 2. Build season (end of Holiday break to the beginning of Winter break in February), when students design, manufacture, assemble, test, and then field a robot for competition; and 3. Post-season, when students document lessons learned and plan for the next season.

Team 972 is fully owned and ran by Los Gatos High School, of which, the teachers (hereinafter referred to as the “Team Managers”) are the direct representatives of the school, and they create procedures and policies that align with the school’s mission. Los Gatos High School’s mission is to *“optimize the learning of each student; promote lifelong learning; social responsibility; and positive physical and mental health”*. This team handbook was created by the school to specify how the team will operate. Los Gatos High School has absolute authority to modify the team (and this handbook) at any time, and in any way it sees fit to satisfy and promote its educational, health related goals.

Given that LGHS desires to optimize learning, a lot of the tasks this team does are fully in the domain of the student; having adults or the school perform these tasks reduces the educational potential.

Iron Claw Mission Statement

Iron Claw exists to *learn* robotics and engineering in a safe, positive, challenging and rigorous environment via fielding a competitive robot in the FIRST Robotics Competition.

While we participate in FIRST and are closely aligned with them, we do not share all of the same missions as FIRST. We exist to field a competitive robot and to learn robotics, not to spread STEM awareness in our community or to do community outreach. While we highly value those principles, FIRST is a different organization with their own mission.

Vision Statement

Without compromising our Mission Statement and Core Values, Iron Claw will take 1st place on Einstein field at the FRC World Championships.

Core Values

These core values are tantamount to everything we do on this team:

- Above all, create a healthy and safe learning environment that values positivity, mutual respect, and fellowship.
- Learning is always above winning, and learning includes the ability to fail and accept failure as an essential part of learning.
    - i.e. the team's final product is educated students, the distant second product is a world-class robot.
- Students design, manufacture, build, test, and compete their own robot. The robot and competition is completely in the domain of students.
- Students learn and honor wisdom and knowledge of more experienced mentors.
- Students honor mentors teaching and instructing them in robotics.
- Students learn, honor, and abide by the *engineering process* taught by mentors. This is the process they use to design and build their robot.
- Mentors do not, in any way, do the work that is in the students domain. Doing so erodes their learning opportunities.
- Within teaching, mentors never say or teach anything that can be sufficiently, correctly, and as rigorously taught by students. Teaching should happen as much as possible by students. Mentors step in if the teaching is not correct or precise.
- Foster and grow soft skills necessary to work in a team such as listening, negotiating, compromising, public speaking, team cohesiveness, collaboration, communication, leadership, followship, empathy, and ***kindness.***
- Honor the domains of jurisdiction.
- Understand that the team is completely owned and managed by Los Gatos High School, and the managers that run it.
- Students understand that they joined a *team*, and all aspects of running a team, however desirable or undesirable, is performed by them. Anything that can safely and *correctly* done by students, will be done by students. Beyond technical work this includes, but is not limited to, cleaning, organizing, fundraising, administration, finance, communications, facilities management, and networking.
- There is parity and equity in team jobs and work for all students. All students have reasonable tasks to do and complete.
- As much as possible, meaningful tasks are delegated to younger members and younger members are allowed to try, and if it happens, fail in a comfortable atmosphere.
- Iron Claw is a safe and inclusive space of mutual respect for ALL students regardless of individual traits. (*Please see our diversity and inclusion clause for more details on this*.)

- Students are learning and can demonstrate it. Students learn (and commit to memory) specific robotics/engineering knowledge. Students can represent their learnings competently orally, written, or in a performance based fashion.
- Time is a limited resource on this team and its focus is used to further our mission, vision, and team goals.
- Have serious fun with robotics for all parties involved. (Emphasis on “serious” and “fun”. Remember, fun is often not funny :)

Goals

- Build the best robot that our team can build, strategize our path to success, and achieve the best result we possibly can.
- Create and provide pedagogical systems (curriculum, pacing guides, instructional practices) for long term institutional existence and success.
- Create top-notch robotics facilities with multiple workshops and a practice robotics field to build and test robots.
- Manage facilities and equipment to create the best robot building environment.
- Create systems of networking and collaboration to increase our visibility to the FRC world. Build a world class website that shows the world our team, and that holds valuable FRC resources.
- Create a harmonious and respectful relationship that continues to honor and respect the domain of the three distinct groups on our team: Team Managers, Mentors, and Students.

Student Team Goals

Student goals are crafted yearly at the beginning of each year and listed here.

About FIRST & FRC

FRC is the FIRST Robotics Competition. FIRST (For Inspiration and Recognition of Science and Technology) is an international organization that creates a new game for competition each year. Each year, more than 3000 teams from 39 countries compete in the new game at FRC events around the world. See firstinspires.org to learn more.

How to Join the Team

Iron Claw Robotics is a ***class*** but primarily a ***team*** at Los Gatos High School. Currently we have a 50-student limit on team size. There are many reasons for this that deserve longer explanations but here are a few of the most salient reasons for this:

- Our facilities can only accommodate that size. We cannot physically fit more students into our work spaces.
- We generally do not have enough adult supervision (mentors and parent volunteers) to accommodate more students. There are only two full time Team Managers, and various mentors that attend at their disposal.
- We, as of yet, have not found a way to engage more than 50 students on only one team that builds one robot.
- We cannot scale up given that we are only one team, with one robot, and a limited set of jobs.

These are all problems the school is working to resolve. As a school, our goal is to never deny learning or engagement opportunities to students at all costs, but sometimes students need to be turned away because we've hit our limit or we cannot scale up or grow the program in a reasonable way.

Steps to Join

1. In order for students to show their intention of wanting to join the team, all they need to do is ***register for the Robotics class during course registrations***. This will put them on the application list.
2. In April the Team Managers will start the application process for the following year and applicants will be contacted by the teacher. The application process is two steps:

    1. A mandatory meeting will be held with students and parents. ***Parents are required to attend.*** Here an application form and survey will be filled out by students. In the survey students are quizzed on some of the following basic questions:
    What is FRC? Why does this team exists? What is the goal of the team? Why do they want to join this team? Do they know the nature of this team?

    2. Applicants will need to get an adult reference regarding their prior performance. Students will provide the contact information of the reference at the initial meeting. This can be a previous teacher. Ideally a teacher in a STEM field: science, technology, engineering, or math. Previous FIRST coaches are also good.

Students will be contacted by mid May if they have been accepted into the team.

This is a relatively serious team with in-depth time commitment. ***Please see our FAQ in the Appendix regarding the team***, or for a comprehensive overview, review this Team Handbook that has nearly all our operating procedures.

List of Events

Team 972 will participate in a ***maximum 3 FRC Robotics Events*** (this includes any preseason games) during the year, ***not*** including the Houston Championship. If the team makes it to Houston the maximum may be 4 FRC Events. Students have the ability to lobby for certain events, but the final call of what events to attend will fall on the Team Managers. Note that dates and locations of certain events will be provided to your student in class.

The events that are highlighted in green are guaranteed to be attended. The non-highlighted events are not guaranteed and they are optional. The FIRST Championship will be attended if we qualify and if funds are secured to attend.

Event Description	**Tentative Event Schedule**
Preseason Competition	Chezy Champs or CalGames - Fall Semester
First Regional FRC Competition	Typically during the month of March or April
Second Regional FRC Competition	Typically during the month of March or April
Third Regional FRC Competition	Typically during the month of March or April

FIRST Championship - Houston	Should the team qualify at one of the Regionals
Robot Demonstrations at sponsor organizations	Intuitive Surgical, NMF events, Kiwanis Club, Rotary International San Jose/Los Gatos area - dates various.
Robot demonstrations at fundraising events	Los Gatos Winter Parade - December. Rotary Club Los Gatos, Kiwanis.

The school requires a field trip activity form to be filled out to attend all these events. Student attendance at these events is optional with the exception of the local regional competitions. Generally, students participate in one or more additional events depending upon their interest and availability. Students will be provided transportation and, depending upon the size of the event, one or more adult registered mentors will be present at all times. More details will be provided in class.

Team 972 Structure

Team Leadership

Team 972 is managed by a group of leadership students, Team Managers (school representatives), and Lead Mentors.

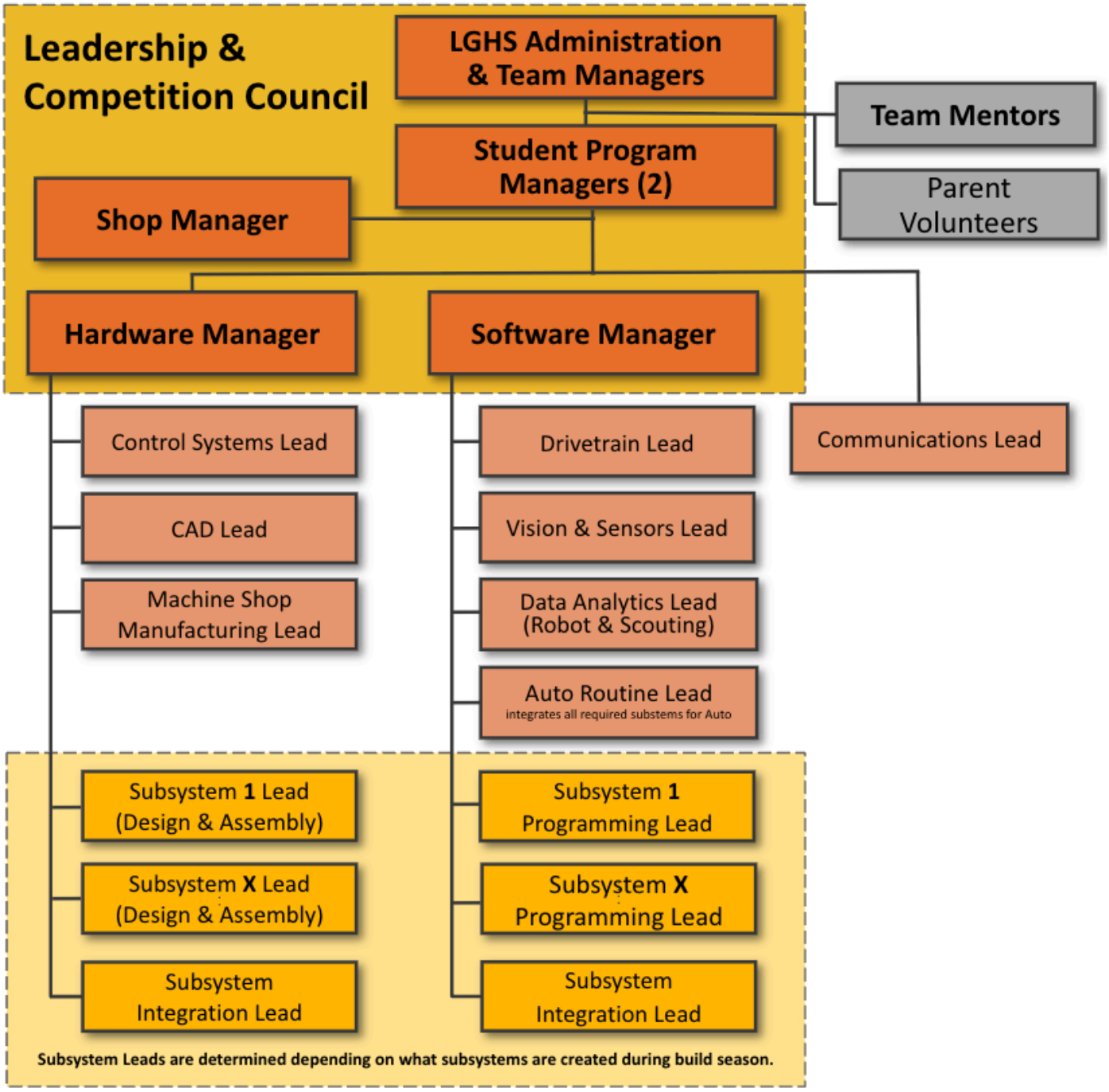
Team Managers (a.k.a. Robotics Teachers)

- Rodrigo Coppelli (Primary)
- Mariam Fan (Primary)
- Industrial Technology Teacher - Aaron Payne

Lead Mentors

- Lead Mentor and FIRST Team Liaison - Mornay Van Der Walt
- Logistical Mentors - (Strategy, Operations, etc)
- Technical Mentors - Jerry Roylance, Art Chan, Sunny Guan

Team 972 Organizational Chart



All team roles are described in our [Team Position Section] in the Appendix.

Sub-teams

All non-technical work on team projects is divided into different categories as indicated on the Org Chart and assigned to the corresponding sub-team. Each sub-team is headed by a student leader who delegates work to its members. Every student is assigned to one sub-team based on their application preferences. They will have obligations to this primary sub-team and be responsible for

completing action items delegated to them. In addition, students are encouraged to join and participate in additional sub-teams, as long as they fulfill their obligations to their primary sub-team.

Sub-teams support the whole team in completing vital technical and non-technical tasks. These roles are essential to the overall success of the team.

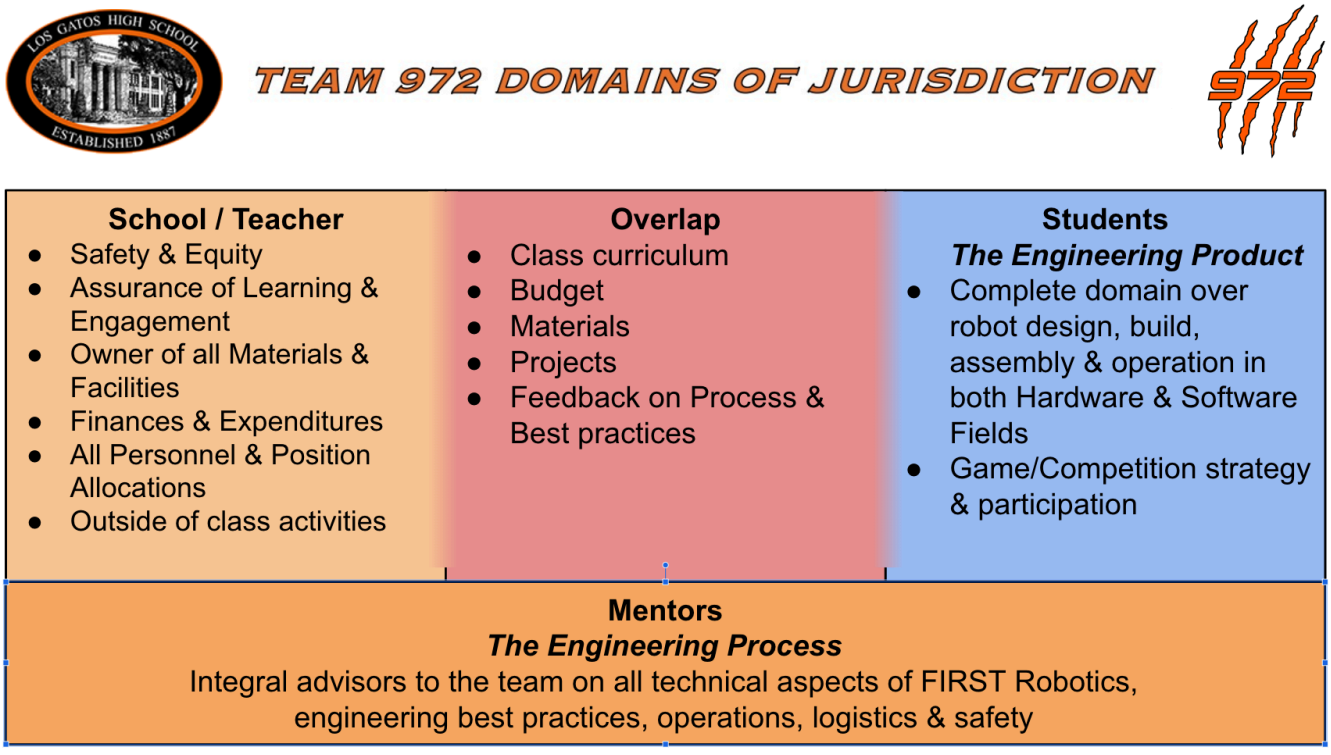
Please See Appendix A for a full list of Student Roles & Responsibilities and Mentor Roles & Responsibilities

Domains of Jurisdiction

Team 972: Iron Claw Robotics operates fully under the jurisdiction of Los Gatos High School (LGHS). LGHS has ultimate and complete domain over the team and how it operates, allowing for the school at any time to make any decision regarding the team it feels necessary. Within this framework, however, **it is the *school's desire to create a team that is student-run and student-managed to the fullest extent.*** LGHS recognizes the enormous benefit of student-led learning and is proud that many aspects of this team are fully under the domain of students.

The Team Managers operate as the school's representative, and thus decisions made by them are to be in the best interest of LGHS. Therefore, students and mentors will respect and follow the team manager's decision as if it were the school's decision. Any decision made by the Team Managers must be made under the assumption of complete transparency, as all decisions may be brought to the LGHS administration if the need arises.

The following diagram shows the jurisdiction domains that pertain to the school and the student team members.



Under the “School/Teacher” category the school aims for students to manage as many areas as possible, however the school retains the final decision. Similarly, the mentors advise students on items in the student section, however students retain the executive decision in their area.

Clarification of Bullet Points in Domains of Jurisdiction

- School/Team Managers (Note: the Team Managers represent the school and the desires of the school, not the desires of an individual teacher)
    - Safety: A teacher may halt any activity at any moment if any activity may seem like it could cause physical or mental harm.
    - Equity: Team Managers will ensure that all students are able to participate and engage in the team, and that students aren’t unfairly depriving others of being engaged in the team.
    - Assurance of learning & engagement: Team Managers main goal is to ensure that there is learning taking place that follows our Mission Statement. High priority is placed on all students having meaningful activities to engage in.
    - Management of Materials/Facilities: The Team Managers are in charge of all materials and equipment on the team regardless of how they were procured. Once an item is given/donated/bought it belongs to Team Iron Claw. The Team Managers are also in charge of all facilities that the team uses on campus, and as such, states when, how, and who will use them.
    - Budget executive: The Team Managers are in charge that donor and school’s money is being spent responsibly. The Team Managers may approve or deny a purchase request.
    - Personnel decisions: The Team Managers have ultimate authority of who is in the class, and how many students are in the class. Team Managers also have ultimate authority over which adults work with students and in what capacity. No adults have a right to work with students on the team; they need to be authorized by the school.
    - Outside of class activities: Any outside of class activities are designated team activities and under the jurisdiction of the school. Who, how, and when these activities are held is up to the teacher.
- Students
    - (Student Team Leadership to complete this section)
- Mentors
    - Responsible for advising and supporting the team (Team Managers and students) on the technical aspects of FIRST Robotics, engineering best practices, operations, logistics and safety.

Team 972 Ethos

Mentors

Do	*Do not*
● Actively express ideas and ask questions ● Respectfully engage students ● Openly offer suggestions and ideas ● Respect final student’s decision regarding the robot. ● Keep tone respectful; all young people make mistakes.	● Design or CAD the robot ● Machine or fabricate anything. ● Assemble the robot ● Program the robot ● Fix or troubleshoot the robot ● Prototype ● Clean up

Students

Do	*Do Not*
• Honor, respect, and welcome mentors on the team. • Follow essential, respectful, courteous communication norms with mentors. o Acknowledge or greet mentors when possible. (A simple "Hello Mr/Ms._____" is sufficient) • Actively seek out mentors to learn from their expertise. Initiate questions and conversations. • Work daily with mentors, and include mentors in their decision-making processes. • Respectfully agree or disagree with mentor's ideas. • Respect decisions in mentor/teacher domain. • Respectfully express if they would rather not have help at the moment.	• Ignore mentors • Not answer mentor's questions. (respectfully answering that you can't answer something is an answer!)

Member Obligations & Opportunities

Class/Team Attendance & Participation Expectations

One of the most important aspects to being a successful robotics team member, and a person who is in the know and contributing to the team is showing up to our meetings. A yearly calendar of meetings is made before the year starts but it may be subject to change on rare occasions depending on particular circumstances. Our yearly calendar may be seen here. The team does not meet during finals week to allow students to focus on their academics. As of 2024, we have also reduced the number of meeting days during AP tests.

There are two types of attendance for robotics: ***Class/Team Meetings*** and ***Open Shop Hours***:

Class/Team Meeting Attendance
Class/Team Meetings are sacred and they are "required" attendance. Think of this as any other period during the day. For example, you would not schedule other competing activities during your English, Math, or any other class. You would even try to not schedule things like a dentist appointment or driver's test not during your class time.

Since we are modeling this team as a company and a start-up, students are allowed certain days off. For example, teacher's are given 10 sick/personal days for 183 work days. This translates to 0.054 free days per work day. Students will be afforded 0.087 sick/personal days per work day (so more generous than what teacher's are afforded). Here are the rules for sick/personal days:

- Students will be given **3 sick/personal days in fall**, and **3 sick/personal days in spring**.
- You get to carry over only one unused sick/personal day from Fall to Spring. No days carry over to the following year. In total, students have 6 personal/sick days a year for 68 mandatory meetings.
- If you go beyond your allocated missed days, you are allowed to make up one day per semester. This missed make up day you need to arrange with one of the team managers, and it is the team managers discretion what day/time it is. Open shop days do not count as make up

days. Usually that time will be made up doing shop clean up or organization (this will be work and likely not robotics work).
- If students fail to make up their missed attendance, their attendance grade will be reduced by 20 points per day missed, or 10 points for every half day. Every student starts with 100 points in their participation grade, and it is a category on Canvas that is 10% of your total grade.
- The increment for missing days is half days. So you can miss half day if you were to leave class early. If you leave class before the halfway mark, it will count as a full day. If you leave early after the halfway mark it will count as a half day. Any leaving early counts as a half day (even leaving 5 minutes early).

Sports or other After School Activities
There is no leniency above the 3 allowed missed days per semester for sports or other activities. If you want to play sports or any other after school activity, you should try to fit in so that you do not miss the allowed days. If you can make it work, great, proceed. If not, it is recommended that you do not pack your schedule!

Tardies
If you are tardy less than 5 minutes, you will be docked 2 points. If it's beyond the 5 minutes, you will be docked a half day, or a full day if you come after the halfway mark.

Examples of How this Works
- Jennifer missed two days in fall. She left early one day at 4:15; this counts as missing a half day as she left after the halfway mark. In total she missed 2.5 days in fall. No points deducted from her grade, and she gets to carry over .5 days to the spring.
- Dylan missed 4 days in spring. He also left class at 3:15 on a day that class goes from 2:30 to 5:30. Because he left before the halfway mark it counts as a full missed day. In total he missed 5 days or 2 too many. He made up one day of work for 3 hours. So, he is in debt one day, which translates to 20 points off his attendance grade for the semester.

Instructions on How to Miss a Personal/Sick Day
For students to miss a personal/sick day. They need to have their parents email both team managers at 972teachers@lgsuhsd.org by 8:30 AM the day of the absence. No explanation for the absence is necessary. If an email is not sent in time, it does not count as a sick/personal day, and the day will be required to be made up. The only exception to this is if it's an emergency situation or sudden illness that you did not know about by 8:30 in the morning. In that case, parents can email us by the time class starts. This will count as a personal/sick day.

Build & Competition Season Hours
During Competition Season, team meetings will be broken up into two categories: **Mandatory meetings** and **Open Shop.**
- Mandatory Meetings: we will have a custom schedule and we will have mandatory meetings 2 times a week for 3 hours (see calendar). The personal/sick day policy applies to these days. These count as your attendance grade. We will have a few mandatory ***weekend*** meetings a year that will be clearly shown in our team calendar. You are attending this unless you have planned something before the year starts, and you have already been pre-approved by the teacher(s). **We have (as of 2025 Build Season) 56 class time hours.**

- Open Shop: We will also have Open Shop Hours on Wednesday from 2:30 to 5:30, and during the weekends from 10:30 AM to 4:30 PM. We will have two shifts to arrive & leave. One shift

runs from 10:30 AM to 1:00 PM, second shift is from 1:30 to 4:30 PM. These are not mandatory times.

Build Season Time/Hours Requirement
During Build season (7 weeks in total from the 1st week in January to the 1st week in March) students have a graded assignment that requires students to come in for a minimum number of hours (see below). There are typically around 110 Open Shop Hours during Build Season. Students should plan to attend between 5 to 12 hours a week of "Open Shop Hours" during Build Season. As a point of illustration - many of the highly motivated and passionate students on the team typically log over 75 hours during the Build Season, with a handful of students logging close to 100 hours.

Specifically, here are the requirements of the Open Shop Hours assignment:

- General population students:
  - **1st years on the team: 40 hours of Open Shop Hours** and at least 3 hours per week. This represents on average 6 extra hours a week.
  - **2nd years and above: 60 Open Shop Hours** and at least 6 hours a week. 60 open shop hours represents around 8.5 hours per week.
- Directors: At least **80 hours** during Build Season and at least 8 hours per week. 80 hours represents around 12 hours per week.
- Program Manager: At least **85 hours** during Build Season and at least 9 hours per week. 85 Hours for 7 weeks represents around 12 hours per week.

If the number of hours for directors and Program Manager seems very high to you, you should not run for these positions. That said, most of our effective Program Manager and Directors easily surpassed 100 hours.

Competition Season Time/Hours Requirement
This is a new requirement as of 2024. After the 7 week build season, there will be a new open shop assignment. Here are the requirements for this:

- General population students: at least 3 hours per week.
- Directors: at least 6 hours per week.
- Program Manager: at least 8 hours per week.

Open Shop Hours

- Open Shop Hours are **not** required attendance, however they are highly encouraged if you are looking to make a meaningful contribution and impact on the team. Even so, these shop hours may have a specific objective as ran by the Program Manager or the teacher where you may want to attend. Open shop hours may be ran by school approved mentors. As "homework", you have some amount of open shop hours you need to attend during competition season (see above).

Other Attendance Requirements

- The team competes in at least 2 - 3 Regional FRC competitions a year. These are 3-day events in March and April. ***Students are required to at least attend:***
  - If we have 3 competitions: ***4 full days of competitions*** not including the practice match days (1st day).
  - If we have 2 competitions: ***3 full days*** not including the practice match days (1st day).

- The Leadership Council (composed of the Team Managers, Program Manager, Directors, Shop Manager, and sometimes mentors) meets weekly year-round. The Leadership Council must attend these meetings unless they have "*urgent, unplanned, and unforeseeable reasons or events that prevent them from doing so".*

- In addition to standard classroom hours, students will be assigned at least ***6 hours a year*** of ***non-technical, teacher allocated work hours***. These are discretionary hours decided by the teacher and usually involve shop maintenance. We have a large inventory of parts, materials, and cleaning that needs to be done by students to keep this team going. It is a very material intensive team, and the students are the ones that maintain it.

- LGHS students are free and encouraged to join any FRC team they choose, but they can only join one. While Team 972 strives to be as helpful as possible to all FRC teams out there, the team will not help another team comprised of LGHS students -- meaning that no other FRC team comprised of LGHS students will be able to use the school's facilities, materials, or student time/help. The school believes this separation is best to create a clear understanding that school resources are meant only to help LGHS students of Team 972.

- The Team Managers manage all team-related events outside of school. Anytime the team wants to attend an outside of class function as Team 972, they must get approval from the teacher or relevant mentor at least two weeks in advance.

Competition Logistics & Procedures

- All competitions are officially school field trips, and as such must follow all rules governing school field trip rules.
    - ***All members will travel with the team and in whatever fashion the school decides the team transportation will happen.*** This includes local field trips. Students will not arrive on their own accord, dropped off by their families, or with their own transportation. Traveling all together as a team ensures all students have transportation, accommodation, meals, accountability, and safety for all students. While FRC competitions are public events, students will be denied permission to participate with the team (in pits, stands, or in the field) at the competition if they do not travel with the team.

    - The team will pay for all student expenses at the competition. If enough funds are not acquired to pay for all student expenses ***the school may cancel participation at the competition.***

    - Any request for fees or expenses associated with Team 972 field trips is a request for a ***voluntary donation***. No student shall be denied participation due to failure to make said ***voluntary donation***.

    - Education Code 48904 (b) (1) allows the district to charge for damaged school property or failure to return school property on loan to a student, should damage occur during a field trip.

    - Any chaperone that will transport participating students in their Private Car must complete and turn into the Principal a Private Car Travel Check.

    - The teacher reserves the right to remove any student from the field trip/event based upon information received from another staff member or behavior issues.

- The team will always endeavor to choose one local competition (around a 1 hour max driving time one way) that does not require obtaining accommodation. This is to allow all students the opportunity to attend at least one competition close to home, and to save team funds in attending competitions.

- Students have the ability to lobby for their competition location, but the Team Managers and mentor advisors have the final say. Any out of state competitions students desire to attend will be stated to the teacher by the end of September to allow adequate preparation.

- Team sponsored participation at certain remote and out of state competitions (such as FRC Championship in Houston) is not guaranteed to all members of the team, and nearly always a select group of students will attend. For distant competitions that may require expensive travel arrangements, the team will decide on an ***objective, position based list*** that does not include any student names. This list is approved by the teacher and/or relevant mentors. Please see ***Appendix D*** for an example of a competition priority list.

- In addition to limiting members attending distant competitions, only a limited, necessary group of students will attend the first day of competitions if the first day is only meant to work on the robot and attend practice matches. The whole team is not necessary to attend days where the robot will only be in the pit being worked on or practicing in the field.

- ***Appendix E*** list specific norms of behaviors for students during all field trips and competitions.

- The team will have a well-followed list of rules and guidelines for pit management. See ***Appendix G*** for our rules & guidelines of pit safety and management.

Communication Pathways

Information will be communicated to members over email, Slack, during meetings, and on the website blog.

- Email: all members are required to
    - Use and check their school email address for official correspondence from the team. Official communications from the teacher will be sent via email or Canvas which goes to your school email.
    - Obtain a Slack account. Our slack workspace is ironclaw.slack.com. You are required to check announcements/general and announcements/students.

- Website: the team website is located at ironclaw972.org.

- Blog: Team 972 intends to maintain a blog on the website to inform members of the community of our progress.

- Stay up to date on the robotics season calendar as well as progress at individual tournaments at thebluealliance.com.

Team Finances & Fundraising

How Funding Works

Team 972: Iron Claw Robotics receives a certain amount of baseline funding as an electives class at LGHS each year. This funding covers some of the team's in-class instruction for robotics fundamentals, but is not even close to being able to cover the costs of building the robot itself, or of competing with the robot at the regional FRC competitions the team registers for.

To exist as a competitive FRC team, which requires both a robot and the ability to compete at a minimum of two regionals, the students must raise a significant portion of their own funding from a variety of sources:

1. Corporate sponsorships, donations, and matching;
2. Non-profit grants;
3. Local business sponsorships; and
4. Team 972 one-off fundraising events (Build-a-Bot, Drive-a-Bot, bake sales, etc.)
5. ***Voluntary Donations*** from parents/guardians of students, and their supportive family and friends.

Any funds raised during the school year that are not used to fund the above programs in a given year will be carried over and utilized the following year by the LGHS Ironclaw Robotics program.

Annual Budget/Fundraising Summary

The LGHS Robotics Program annual is approximately **$98,000** above the baseline elective funding provided by LGHS for in-class instruction. Students based their budgets and goals on previous year's participation in FIRST FRC and worked with the Finance Mentor Group to develop a comprehensive fundraising plan to secure sizable contributions from multiple sources.

These programs will afford the LGHS Robotics Class Students the opportunity to participate in three competitions that are beyond the scope of the LGHS Elective in-class instruction as outlined below:

Program	Description
1	Participate in Fall preseason competition using the previous season's FRC robot.
2	Organize In-Class Competition to train newer members and an Advanced Subsystem Project to train senior members.
3	Build a FIRST FRC robot during the FRC build season (January to first week in March)
4	Participate in one local FIRST FRC Regional Competition.
5	Participate in a second local FIRST FRC Regional Competition.
6	Participate in a third FIRST FRC Regional Competition

Funding for Programs 1 to 6 **$48,000**	
7	***Should the team qualify*** - to participate at FIRST FRC Houston Championships. This will require travel expenses for the students, teacher and mentors from SF Bay Area to Houston, and freight transportation of the robot pit.
Funding for Programs 7 **$50,000**	
Total Funding for Programs 1 to 7 **$98,000**	

The students have set a goal of raising $1,000 per student from ***voluntary donations*** from Friends and Family. These donations are ***completely voluntary***, yet a critical source of fundraising. All donors are encouraged to check if an employer matching donation program can boost their contributions, if yes, we request the donor make the matching donation request on behalf of the team with their employer.

Sources	Description	Goal
1	**Student-Led Friends & Family Fundraising (50 Students)**	$39,000
2	FIRST & STEM grants from FIRST partner corporations	$4,000
4	Sponsorships from Wildcat Foundation, local businesses, and organizations	$39,000
3	Fundraising events (holiday parade, build-a-bot, gofundme)	$16,000
Total Fundraising Plans		**$98,000**

Two easy ways to make a Voluntary Donation

- **Donate directly to the team**: You can pay via personal check or credit card. With the credit card you will be paying via PayPal and PayPal does add a 2% “convenience fee”.
    - ***By Credit Card:***
        - Please log on to https://lghs.myschoolcentral.com/
        - You will need to create an account. Please follow the instructions under “My Account” link.
        - Under the link “Class Donations”, choose “FRC Robotics”. Follow the checkout procedures and it will redirect you to PayPal.
    - ***By Check***
        - Please give it to the teacher of the class. If sending with your student please include it in an envelope and state if you would like a receipt.
        - Make checks payable to: Los Gatos High School

        - Memo: FRC Robotics T0504

- **Request a matching donation from your employer:** Many companies will offer matching donations, and these can be a ***huge*** source of funds for our team. Talk to your HR person or appropriate corporate representative about matching your donation to this worthy cause. We can provide receipts of your donations so you can pass it on to your accounting representative to provide a matching donation.

Connect us to your connections: Please let us know of any groups, clubs, foundations, businesses, meetups, churches or otherwise to which you are connected, that we might be able to speak with them about possible donations.

Mentor & Volunteer Information

Parent Involvement

Our student-led team is supported by many parent volunteers and adult mentors. All families volunteer in some capacity, such as providing snacks or meals, rides, event support, or after school supervision. The adult mentors are parents, teachers, older siblings, and other adults who offer their technical or business expertise.

This team cannot run or exist without adult mentor support! Please consider joining!

How Parents/Adults can Get Involved in the team

There are many ways to support Iron Claw Robotics.

- Gift your expertise and become a Technical Mentor
- Join the pool of general Parent Volunteers dedicated to logistical and administrative support
- Make a voluntary donation or help raise funds through corporate connections and local small businesses.

Three Types of Volunteers/Mentors

1) **Technical Mentors.** These mentors are approved by the robotics class Team Managers to work with students. These mentors work directly with students in guiding them on robotics, fundraising, logistics, and all other team aspects. They are approved by the district (TB tested and fingerprinted). These mentors can supervise students.
    a) Tier A: These mentors are cleared by the school to open/close the shop facilities and supervise students. These mentors may run outreach events with students.
    b) Tier B: Mentors help out with all technical mentors aspects, work directly with students, but do not open/close shop.
2) **Logistical Mentors.** These mentors work directly with the teacher and sometimes with students in coordinating much of the logistics in running the team. This could be travel, finances, meals, coordinating other mentors, etc. These mentors are also TB tested and fingerprinted by the district.
3) **General Parent volunteers**. These adult volunteers help out by providing meals, giving rides, and other activities that do not involve working or supervising students.

Become a Technical Mentor

Iron Claw is a student-led team, which means that the students hold full authority and responsibility for designing, building, testing and fielding the robot. Technical mentors nevertheless play a significant role by helping students become a more effective team in achieving their goals, and most importantly, learn engineering. Technical mentors interact with and advise students on all technical aspects such as robot design, prototyping, manufacturing, assembly, programming, and testing. During the build season, they help supervise students during the build, participate in design reviews, provide advice about technical planning/execution, and ensure that school rules are adhered to. These mentors may also participate in pre-season class instruction and coaching. Mentors with no prior experience and are interested in helping in any way are welcome to participate. Specific areas of expertise that are helpful include mechanical design, prototyping, manufacturing, CAD and programming.

How will Technical Mentoring Work?

There are a few ways to be a technical mentor

1. **Be a Regularly Attending Mentor**
   The **best way** to help the team is to show up on a regular basis to team meetings. This could be every meeting, once a week, or some other regular recurring schedule that is relatively frequent. This is the most useful type of mentoring because:
   a. Students and mentors build a good relationship of working together
   b. Mentors get a holistic understanding of where the team is at and what they can help with. Mentors can further advise Team Managers and student leads on where and how the team can improve.
2. **Run a Lesson or a Workshop**
   If mentors can't commit to regularly attending team meetings, and mentors have a useful skill or knowledge they can teach the team, we can set up a lesson or workshop where a mentor could come in for a limited number of meetings to run the workshop.
3. **Wait for Specific Invitation**
   This is if you have the least amount of availability. In this case Team Managers or students will send out an email of specific mentoring, or a specific request. For example this could be requesting help with programming, CAD, project management, or that the team is holding a design review.
4. **Show Up When You Can!**
   Lastly, if none of the above work you can show up when you can. PLEASE email the Team Managers to let us know you are coming. We may have some special events going on that would not make it a great day to come by.

Regardless of what capacity above you want to work with the team, please email the Team Managers if you want to come by; especially if you are in the "Show up when you can" category. Some days may not be very useful to show up as we may not be doing technical work.

Help with Fundraising

The team needs to raise a significant portion of its budget externally (above what the school provides for class instruction). Details of the budget and fund-raising plans have been provided in a previous

section. The team seeks finance and fundraising mentors that can help students maintain season budgets and advise all fundraising activities. The mentors also interface with the FRC program and coordinate competition registration, fee payments, and grants through the FRC website.

Become a Parent Volunteer

Finally, the team is looking for parent volunteers that can help with all non-technical aspects of running the team. Volunteers are needed to help prepare for parent meetings, make registration packets, set up the FRC kick-off event at school, organize build season meals & snacks, set up logistics for competitions (both local and away), and plan the end-of-season party. Please note that these roles do not need a major commitment of your time - for instance, we may need help to drive students or transport meals, etc. So, consider joining the pool of general volunteers if you can help in any way.

Official Rules & Guidelines for All Team Members

Student Code of Conduct

Robotics is a complex team that operates under the rules of multiple organizations -- Team 972, Los Gatos High School, and FIRST -- and has multiple groups as participants: Team Managers, mentors, general parent volunteers and students. As such, the team has a more complex set of agreements and rules that need to be followed versus a regular school class. The school and teacher understand that learning and adhering to these rules is not always immediately learned and understood by all students, and thus endeavors to coach, teach, and work with students in understanding the rules. These rules and agreements are modeled after what an effective and ethical team or organization would expect.

The official list of all rules and regulations that students must learn and go by is listed here.
Also here: https://tinyurl.com/972rules

General Behavior Guidelines

- **Team members will be good humans**.
  Before any robotics activities happen, students will learn the social rules that govern civility, kindness, and proper behavior to create a safe, inclusive atmosphere for all students. the school will endeavor to teach this as their first priority. The team endeavors to reflect the diversity of the school it represents.

- **Team members will exhibit appropriate behavior at all times.**
  Team 972 expects all students to be mature and professional at all times and to follow all rules of FIRST, LGHS, and Team 972. Students must know that whenever they are in public for a team-related activity, they represent Team 972, FIRST, and LGHS.

  Team 972 endeavors to be competitive, but not at the expense of decorum and graciousness in competing with other teams. Team 972 fully agrees with the principles of “Gracious Professionalism” and “Coopertition” espoused by FIRST, and if it can, will offer assistance to other teams in need. During competition, Team 972 will encourage, cheer, and support other teams, and if Team 972 loses we will congratulate the other teams.

- **Student team members are here to learn from Mentors**
  Team 972 honors the fact that many mentors spend a considerable part of their free time coaching and managing the team. The school and students shall
  - Recognize that without mentors the team would not be able to function, or have the ability to run its multiple events and hours.
  - Understand that students learning from mentors is a specifically stated goal of the team, and a key to success.
  - Be reverent and respectful of all mentors and volunteers that work with the team. All students will verbally acknowledge mentors, create a welcome space for them, listen to their ideas, and with respect agree or disagree with a mentor when offered advice.
  - Students will acknowledge that having mentors help guide their decisions is not only integral to their success but a privilege that should be fostered with gratitude. Students are expected to alert the teacher to any complaints they have about any mentor or other volunteer working with the team.

- **Team members will stay engaged with team tasks, projects, and goals.**
  Students are in the robotics team to **learn**, **work**, and **engage** in robotics. If done, students are ***actively seek out*** more work that promotes extended learning in their area or furthers the team's progress toward stated goals. Students are expected to be engaged at all times if they are in the lab. ***The robotics lab is only for working on robotics.***

- **Team members will know the Domains of Jurisdiction, and will comply with legal directives given by lead students, mentors or Team Managers.**

Diversity & Inclusion Clause

Iron Claw Robotics is committed to fostering, cultivating, and preserving a culture of diversity, equity and inclusion. We are actively trying to maximize the diversity of our team.

We embrace and encourage our team member's differences in age, color, disability, ethnicity, family, gender identity or expression, language, national origin, physical and mental ability, political affiliation, race, religion, sexual orientation, socio-economic status, and other characteristics that make each of us unique.

All members of the Iron Claw Robotics Team have a responsibility to treat others with dignity and respect at all times. All team members are expected to exhibit conduct that reflects inclusion during class, at class functions on or off the school site, and at all other team-sponsored and participative events. At no time will members discriminate or mistreat against others based on any of the aforementioned traits.

Any team members found to have exhibited any inappropriate conduct or behavior against others may be subject to disciplinary action.

Team members who believe they have been subjected to any kind of discrimination or mistreatment that conflicts with the team's diversity policy and initiatives should seek out the Team Managers (ideally first) or school administrator. All information shared with Team Managers and administrators will be treated with utmost respect and confidentiality for the individual expressing grievance.

Consequences for Unacceptable Behavior

Most students, if not all, will at some moment make wrong choices or mistakes in their behavior. Team Managers are here to accept that students (and even Team Managers and mentors) may occasionally blunder in their judgment, and that is normal. Team Managers are here to coach and guide students in proper behavior with patience and respect.
That said all students, Team Managers, and mentors will be accountable for their mistakes. Being on Team 972 is a privilege, not a right, and students may receive the following consequences for unacceptable behavior:

- A meeting or a discussion to discuss their behavior.
- Time spent working for the teacher as a consequence.
- Suspended from working on particular equipment or materials.
- Removal from leadership position (parents and school administration alerted).
- Suspended from class for the day (parents and school administration alerted).
- Suspended from class for various days (parents and school administration alerted).
- Expulsion from the team (as decided by school administration).
- Other consequences as deemed by Los Gatos High School administration.

These consequences do not need to be followed in order, and a more severe consequence may be administered with no lesser consequences if a single infraction is egregious enough.

Robotics is a class meant for a mature, morally conscious student. Robotics is a special class on campus as students:

- Work independently often unsupervised.
- Work with equipment that is very expensive, difficult to obtain, and potentially dangerous.
- Are often working outside of school hours.
- Are working with non-faculty, adult members of the community that deserve respect.
- Often work in distant out of school locations representing the team in public events.

Given that, if students show repeated lack of judgment in following the rules, and they have been given multiple instances of correcting their behavior, it may be imperative for the school to expel them from the team. Expulsion from the team may happen in a severe single instance or if there have been repeated infractions with multiple consequences. Given that, it is the school's ***utmost*** goal that students *stay on the team*, are given fair chances to learn proper behavior, and if mistakes are made students learn without needing any further consequences.

Mentor & Volunteer Oath

As a mentor or volunteer on the team

- I understand that the school, and the teacher who represents the school, hold ultimate responsibility for the direction of, and decisions related to the team.
- I will address and speak to students with patience and respect when attempting to guide or teach them.
- I understand that the school wishes the team to operate as independently as possible, but the school reserves the right to step in and make decisions as it sees fit at any time.
- I understand that the school manages and approves all parents/adults working with the team, with the goal of creating a safe space for students.

- I am here to represent and work towards the overall good and best interests of the team as a whole. I am not here to represent or lobby for my child, or any specific group of students, and generally will “check my kid at the door.”
- If an issue arises where there is a conflict of interest, such as a discussion related to my child, I will recuse myself as appropriate. I may represent my child separately in a parental role.
- I will be cordial, polite, and assume good intentions of everyone in the group. While I may have passionate opinions about a topic, I will address issues and not people.
- I respect and promote FIRST’s principles of allowing the team to be student led as much as possible without compromising safety, equity of access, and general fairness.
- I will respect the Domains of Jurisdiction of the team: decisions left to the school and decisions left to the students.
- As a mentor or volunteer with the team, I may be privy to some personal information about students that I am not allowed to share or discuss with others.

Teacher Oath

As a teacher and representative of LGHS:

- I have the overarching goal of representing the school’s interest in promoting learning, equity of access, general student well-being, safety for all, and conserving/protecting facilities and equipment.
- I operate under the primary goal of creating a positive learning environment and overall benefit/wellness of the team. All actions will be for the good of the team.
- I respect and promote FIRST’s principles of allowing the team to be student-led as much as possible without compromising safety, equity of access, and general fairness.
- I endeavor to manage the team with as much involvement and representation of mentors and students into the decision-making process.
- I respect decisions that are in the student domain, decisions that are in the mentor domain, and decisions in the school domain.
- I will be cordial, polite, and assume good intentions of everyone amongst students, mentors, and volunteers.
- I will grow the program sustainably, increase diversity, and secure educational materials and facilities.

Student Question and Concerns

Improvement on our team often come from students presenting new and innovative ideas on how things should be done. It is important for team managers/mentors to allow a forum for students to express their questions and concerns. It is also important that these questions and concerns do not take up valuable meeting time. Often questions and concerns are by a minority, or select group of students, and to allow these concerns to take up the class time of the whole team is not right.

Given the fact that students should have a forum to speak their questions and concerns and team meeting time should be respected for pre-planned robotics work, if students have questions and concerns they can make an appointment with the team managers, outside of team meeting time, to discuss this.

If the team managers present a topic, during official team meeting time, that there is disagreement, questions, or concerns amongst the students, and this is taking away valuable class time, the team managers may stop that conversation and state that the topic can still be discussed, but it will need to be at an appointed time not during team meetings. Students may politely suggest this as well if it is sensed that the conversation is taking too long.

Appendices

Appendix A: Yearly Calendar

We have a custom calendar that is different from the school's calendar. Despite that, we still try to meet mostly during 7th period. See this calendar for details.

Appendix B: Team Positions & Descriptions

Student Roles

Above and beyond all specific duties shown below, students who apply to lead positions endeavor to be ***coachable*** in their fields by mentors and team managers. ***Coachable*** is as important (if not at times more important) than absolute skill or knowledge.

Program Manager & Directors

The Program Manager and Directors are the primary student managers of the team. They create, supervise, and manage the work of their respective teams, and should be well-versed in each area of expertise in their team.

Leadership Council:

- Comprised of the Co-Program Manager, Operations Director, Hardware Director, Software Director,one discretionary Shop Manager as decided by the teacher, and the Mentor Council members..
- Meet weekly to decide plans, curriculum, and logistics of the team.
- Meet for up to one week (maximum 5 working days) over the summer to plan the upcoming year.
- All leadership council students will participate in an equal way in interviewing students at the end of the year who are applying to the team.

A more explicit and detailed job description of all Leadership Council is listed in this document.

Program Manager
The Program Manager possesses following traits, qualities & duties:

- Is 100% devoted to managerial duties of the team. It is a completely ***hands-off*** position.
- They are technical specialist. This is not a non-technical position. It is a highly technical position that understands the balance between all the technical subteams (hardware and software), understands their interdependence, and with the hardware and software leads, is able to guide hardware and software tasks.
- The are an FRC program specialist. They must know how the FRC game and anything tangential operates.

- All their work, decisions, and duties are always furthering our mission and vision statement. Every action is a direct reflection of our mission/vision statement.
- Program managers should have the best, wisest ideas. Leading the team into unproductive work that is not towards our mission/vision statement is not considered good performance.
- Their job of management is sufficient work that they are completely hands off in terms of work.
- Must be ***visionary***. As much as program managers are directing current work they are always thinking about the next step and prepared for the next step. They should spend as much time working on the present as thinking about the ***future.*** Program manager understands that preparing our highly complex team for the future is a full time job.
- Are the primary student managers of the team. Have a strong grasp on ***human resource management***. Is always preparing for what personnel is needed to perform certain jobs in the future. Must accurately predict what needs to be done in a highly changeable environment (build season).
- Will make informative, professional documents and planning sheets. Will be offered some help with this, but the responsibility of creation rests with them.
- With the Leadership Council creates curriculum, goals, class projects, and daily agenda, in advance.
- Meets ***weekly*** with the teacher and curriculum council.
- Meets for a maximum 5 days in the summer to plan the school year.
- Assist in meeting and maintaining “Domains of Jurisdiction”.
- Works to encourage meaningful engagement of all members.
- Mediate and solve team-wide problems.
- Ensure team unity and rewards/acknowledges work of exemplary members.
- Is not responsible for advocating for individual students. Individual students are in charge of advocating for themselves.
- Is not responsible or allowed to continually do other’s work if other people are doing it insufficiently. The problem of the other person needs to be addressed, not enabled.
- Is in charge of creating motivation in the student team that is work related.
- Is respectful of the Team Managers, mentors, and school that is the team owner.
- Will attempt to “pick up the slack” by ***delegating*** or leading anything not covered by another team leadership role.
- Create and tracks a daily ***personnel management system (Google Sheet task list)*** that:
    - Prioritizes jobs and activities to each team member.
    - Ensures tasks are given out to each member of the team for each meeting.
    - Delegates managerial duties to other directors or leads.
    - Is user friendly, easy to follow, and accessible for all students to use.
- Manages a ***project management system (Project Plan or Task List)*** that:
    - Creates and stores all tasks and projects the team wants to work on.
    - Tracks all dates and benchmarks during the competition season and offseason.
    - Updates project plan according to subteam progress.
    - Ensures there is proper adult staffing if a school staff member cannot open shop.
    - Is user friendly, easy to follow, and accessible for all students to use.
- Creates a specific project management system for build season (Gantt Chart/Task List)
    - Shows the workflow of the complete robot build.
- Organize and run all student team leads together and schedule meetings.
- With Operations Director, communicates all important events/information to all students with plenty of advance notice.

- Assists Team Managers in communicating all important events/information to mentors and parents.
- Manages the Battle Rhythm and helps Team Managers to ensure big-picture team commitments are being met – competitions, overall season, travel logistics, budget, business plan, etc.
- Attends all new member meetings, parents meetings, competitions etc.
- Being the highest ranking job on the team, the program manager will receive certain privileges. Guaranteed competition attendance will be offered. Will also be offered other students to help with data entry, spreadsheets, and document formatting. Other incentives will be considered.

Operations Director:

- The primary manager of the Fundraising, Communications, and General Administration (Program Management) Teams, collectively known as Operations Group. **Above any technical or work related topics, they are tasked with managing and supervising the work of their group and ensuring it is being performed adequately**.
- Leads and manages all operational and organizational tasks and activities of the team, including fundraising, communications, general administration (program management), logistics, and networking.
- Is actively engaged with all the leads to ensure the work for their respective group is being prioritized, and coordinated based on cross group dependencies. Oversees the delegation of operational tasks across the team. All team members have a responsibility to work on non technical operational tasks to ensure the team is setup for success.
- Ensures proper continuous education and training of the Operations Group, as well as the full engagement of the Operations Group throughout the competition season.
- Helps the fundraising, finance, general administration (program manager), and communications lead achieve their goals depending on what the priorities are at the moment.
- Ensures General Administration (program management) Lead is collaborating with the Program Manager, Hardware Director, and the Software Director to organize the teams online documentation (Google Drive), with the goal of making it easy to use and navigate. Keeps files organized and purges old, useless documents. Completely creates a new folder every year.
- Ensures the Communication Leads is collaborating with the Program Manager, Hardware Director, and the Software Director to send out relevant communication reminders regarding team meetings and team activities via any of our communication portals.
- Overseas the budget activities (setting and tracking) with the Finance Lead, Team Managers and the Fundraising and Finance mentor as needed to ensure a realistic competition budget is set to support the teams operation during the competition season.
- Oversees fundraising activities with the Fundraising Lead, Team Managers and the Fundraising and Finance mentor as needed to ensure achievable fundraising goals are set along with a fundraising plan. The Fundraising Lead with execute the plan with assistance from all students on the team as needed with oversight from the Operations Director.
- Oversees networking activities with other FRC teams and other groups that will bring benefit to our team. Identifying neighboring teams our team wants to build a relationship with, and purposefully reaching out to build a rapport, learn, and help each other out. Attends nearly all networking events.

Hardware Director:

- Is the primary manager of the Control Systems, CAD, and Manufacturing Teams; collectively known as the Hardware Group. **Above any technical or work related topics, they are tasked with managing and supervising the work of the Hardware Group to ensure work on the**

robot hardware and control system components is progressing in line with the build season tasklist and project milestones.

- Has a solid understanding of FRC robot subsystems, for example drivetrain, intakes/outtakes, game piece indexers, climbers etc. This understanding should also include design best practices, and how robot subsystems operate when integrated with approved FRC Control System components and supporting software.
- Has a keen awareness of the approved FRC Control System components (roboRio, PDH, mini Power Modules, Radio Power Modules, RADIO, approved motors, sensors, pneumatics, etc) made available by FIRST and the FRC community, and how to leverage them as needed for the overall improvement of knowledge and skills of all members of the hardware group including themselves.
- Has a keen awareness of the types of manufacturing machines in the machine shop that are available for the manufacturing of all non purchased robot parts.
    - In partnership with the Manufacturing Lead ensures members in the machine shop are allowed to be in there.
- Is actively engaged with all the leads to ensure the work for their respective group is being prioritized, and coordinated based on cross group dependencies.
- Along with the Program Manager and Shop Manager, is responsible to ensure the machine shop/engineering room are open if they want it staffed, and should alert the teacher within a minimum 48 hours in advance if the team wants the machine shop open.
- Ensures proper continuous education and training of all Hardware Group team members. Ensures the Hardware group are following the rules and not using any tools or machines if not approved to do so.
- Ensures the Hardware Group are engaged as needed in the robot prototyping, design, manufacturing, quality assurance, assembly, and testing of the robot during the competition season. Also responsible for ensuring there is ongoing cross group collaboration with the Software and Operation Groups as needed.
- Maintains the Hardware's Group engineering documentation for the season. The expectations is that Hardware Director is delegating the creation and updates to engineering documentation to various team members across the Hardware Group.
- Creates schedules and deadlines for individual hardware tasks for the Hardware Group during the competition season, being mindful of the dependencies with the Software and Operations Groups to ensure the robot is ready in line with the competition season project milestones.
- In collaboration with the Program Manager and Software Director they will oversee the hardware prototyping work at the start of the build season.
- In collaboration with the Software Director, they will co presents and manage weekly Team Update meetings during the competition season to review and discuss the progress of the robot from a hardware and software point of view with students and mentors.

Software Director:

- Is the primary manager of the Software Group who will work on programming robot subsystems, for example drivetrain, intakes/outtakes, game piece indexers, climbers etc., software development and test of the scouting application & updates to support the newly revealed game, data analytics (robot log data and scouting data). **Above any technical or work related topics, they are tasked with managing and supervising the work of the Software Group to ensure work on the robot software is progressing in line with the buid season tasklist and project milestones.**

- Beyond having experience with software development concepts, code reviews, testing, quality assurance of code, and troubleshooting the Software Director should also be proficient in programming and testing various FRC specific robot control systems.
- Leads whiteboard sessions with the full software group and interested mentors to plan out subsystems and commands for the robot once robot functional requirements and robot subsystems have been agreed upon and documented after game reveal.
- Has a keen awareness of the many software resources made available by FIRST and the FRC community, and how to leverage them as needed for the overall improvement of knowledge and skills of all members of the Software Group including themselves.
- Ensures proper continuous education and training of the Software Group, as well as the full engagement of the Software Group team throughout the competition season.
- Oversees all aspects of software development and updates for the robot subsystems, scouting application and data analytics initiatives to ensure all work is progressing in line with the build season tasklist and milestones.
- Is actively engaged with all the leads to ensure all work for their respective group is being prioritized, and coordinated based on cross group dependencies.
- In collaboration with the Program Manager, and the Hardware Director, provides overall vision, guidance, and timely updates during the competition season for the programming, testing & troubleshooting (autonomous, teleop, end-game, and vision systems) portions of the robot in support of the robot hardware. Actively collaborates with the Hardware Director in organizing the testing and repair of the robot during build and competition season.
- Maintains the Software Group's documentation for the season. The expectation is that the Software Director is delegating the creation and updates to the software documentation to various team members across their group.
- Creates schedule and deadlines for specific software & programming tasks during the competition season, being mindful of the dependencies with the Hardware and Operations Group to ensure the robot is ready in line with the competition season project milestones.
- In collaboration with the Program Manager and Hardware Director they will oversee the software work in support of the hardware prototypes at the start of the build season.
- In collaboration with the Hardware Director, they will co presents and manage weekly Team Update meetings during the competition season to review and discuss the progress of the robot from a hardware and software point of view with students and mentors.

Shop Manager
(Note: the Team Managers are by default the primary shop manager, but this student is the primary student manager)

- This position is appointed by the school's representative.
- This is a position on the Leadership Council, and is someone who can add value and insight to all Leadership Council meetings.
- Leads a team to ensure the following tasks are completed. May delegate (with teacher approval) the following tasks, but is ultimately responsible for their completion.
- Is primarily responsible to ensure the machine shop/engineering room are open if the team wants it staffed, and should notify the Team Managers and lead mentor within a minimum 48 hours in advance if they want the machine shop open. Hardware Directors also have a shared responsibility to ensure this happens.
- Is responsible and in charge of all materials and equipment on the team. This person may need to devote extensive time to how all tools work, where they go, maintenance of them, and storage.
- Is interested and engaged in researching/purchasing new technology the team could use (CNC machines, laser cutters, 3D printers, etc).

- Keeps track of inventory, and has a clear inventory checklist in our Google Drive.
- Creates and manages a pit checklist for competition.
- Notifies other leads when parts need to be restocked.
- Creates orders for materials and equipment that need to be bought to support the operations of the team. Is in charge of adequate returns so the team can be reimbursed.
- Promptly inventories new materials that are purchased, updates order forms, and alerts team members when supplies have arrived.
- Helps organize people to clean our workspaces and storage spaces.
- Designs the pit layout with input from other leads and sign-off from the Team Managers.
- Is superbly proficient in all hand and power tools (or is willing to learn!).
- Makes sure that students are being safe while working (both with fabrication and while working with the completed robot)
- Makes sure that the metalshop is regularly cleaned by everyone
- Any student may make nominations for Shop Manager to the Team Managers. In your nomination, to be seriously considered, please address the aforementioned skills the shop manager would possess and why the person you are nominating would be a good fit for the position.

Team Leads

Team leads are students who are especially proficient in the skills that pertain to their role. They assist the Program Manager and Directors in managing and training their subteams.

CAD Lead:

- Is proficient in the skill of Computer Aided Design (CAD) with whatever CAD program the team is using.
- Follows the design decision made by the team at the start of the competition season and leads the CAD team to CAD the robot accordingly, unless a change is agreed upon in the leadership team.
- Trains new members about CAD software, including good design strategies and practices.
    - Works to find and create a good CAD curriculum.
- Delegates CAD assemblies and ensures their timely completion.
- Creates a clear organizational system for CAD's, and creates a systematic, efficient naming conventions and facility of access.
- Leads the integration of individual assemblies into a final assembly.
- Works with the other mechanical leads to ensure feasibility of all parts.
- Communicates with the mechanical captain and the rest of the team the status of the design
- Keeps a binder of all robot CAD drawing files that are given to machining team (may delegate)
- Manages the creation of all drawing files to pre-arranged specifications.
- Creates exploded views to aid in assembly.
- Is proficient, manages, teaches the creation of CAM files.
- Meets up before August of the upcoming school year to update CAD software for imaging all computers (if necessary).

Control Systems Lead (Electrical & Pneumatics Hardware Lead):

- Is the lead of a group of students devoted to electrical/pneumatics, and may delegate tasks to ensure the following is done. However, this lead is in charge that these items are completed.
- Is proficient in all electrical and pneumatic skills required by the team.

- Is in charge of all batteries, and has all knowledge of how to test, operate, store and correctly discard old batteries no longer required by the team.
- Manages an inventory list of all electrical and pneumatic components
- Labels and tracks status of all electrical components (creates a spreadsheet to do so). Tracks firmware updates and operational status of component.
- Oversees proper implementation of electrical systems and pneumatics into the robot
- Works with the mechanical team/designers/ and CAD team to design and assemble the electrical board as well as other electrical components on the robot
- Works with the substem teams (mechanical and programming) to wire up sensors and other electrical components as necessary.
- Trains members about crimping, soldering, fitting pneumatics, and other electrical skills.
    - Creates tests and quizzes to ensure electrical team is demonstratively proficient.
- Very proficient with hand and power tools. Has extensive experience in all electrical measurement tools (multimeter, power supplies, battery beak, etc).
- During build season ensures completion of electrical tasks in a timely manner when necessary
- Keeps an organized engineering notebook and documentation system that tracks where things are plugged into the robot, and creates a comprehensive wiring diagram that programmers can easily read and understand for their programming purposes.

Machine Shop Manufacturing Lead:

- Works very closely with the industrial technology teacher.
- Is proficient in using all necessary machines in the machine shop, or is actively working towards proficiency in all machines. Manages the manufacturing of parts corresponding to the design.
- Trains all members interested in manufacturing on the machines.
- Ensures that anyone working on the machines has passed the necessary tests approved by the Industrial Technology Teacher.
- Ensures members are following the rules and not using machines if not approved.
- Works with all designers and CADers to ensure manufacturing feasibility of all parts.
- Keeps manufacturing on schedule and creates fallback plans if necessary.
- Has specific duties during the build season.
    - Is primary manager of a Machining Task list.
    - Ensures that there is clear communication between designers (maybe CAD'ers or not) and the machining team.
- Keeps an organized engineering notebook and comprehensive documentation throughout the year
- Preference is given to a member who is in ourLGHS Metals Program and is adept at CNC usage and other equipment in the Machine Shop.

Programming Leads (4 Programming Leads are allocated to cover different areas)

- Decide along with the Software Director what areas they want to focus on leading and short to long term programming goals for the season.
- Create and maintain an easily accessible FRC Control Systems programming curriculum used to help train new students leveraging resources from FRC WPILib website - https://docs.wpilib.org as well as shared resources from the FRC Community.

    - Research and identify useful libraries, and delegate research on particular areas of interest.
    - These research tasks should be delegated inclusively within the robot programming subteam.
- Provide overall guidance and vision for the programming control systems (teleop, autonomous, vision, testing, etc.) portions of robot:
    - Specific responsibilities during the off-season can be assigned flexibly and dynamically.
- Maintain code to ensure that code structure, proper documentation, telemetry, and logging are done while facilitating knowledge transfer across the programming team and aiding with more efficient troubleshooting of code issues.
- Manage code status and updates, including when the code should and should not be changed, as well as checking code quality through PR reviews and leading Code Reviews.
- Manage multiple student programmers to ensure all programmers are meaningfully engaged.

Scouting App (Programming Lead):

- Starting in the preseason, leads a small team to create and maintain a scouting app:
    - Scouting App includes easily accessible UI and useful data gathering tools along with data visualization.
    - The app is very modular, allowing for quick and easy changes from year to year and during competition season.
- Works closely with the scouting and strategy lead to develop and refine the app.
- During pre-season, creates, modifies, and maintains the app with feedback and testing.
    - Tests different potential app layouts and designs with feedback from team and research from other teams.
- During build season modifies the app to work with the current game, after receiving instructions from the strategy lead on what data is needed and not needed. After a competition assesses the quality of data and what modifications should be made.
- Works on any other app requirements, such as a publicity board.
- Delegates these tasks inclusively within the scouting app subteam.

General Administration Lead/Program Manager:

- Leads a small team (3-4) students that can manage administrative team tasks
- Updates all tracking spreadsheets
    - Attendance
        - If students are absent, they will email admin lead and Team Managers. Admin lead will update it on the board.
    - Manage much of the team's data
        - Updates to documents.
        - Update profiles and information of students (positions, jobs, other personal (non-classified) information)
    - Student Hours (extra duty, off season hours, extra jobs)
    - Creates/prints/laminates documents to be distributed in class:
        - Posters, calendars, handouts, board names
    - Manages student lists and documentation

        - Students attending weekend shop
        - Students attending build season
        - Students attending out of class events
        - Students attending competitions
    - Manages/creates forms/polls for students to fill out
        - Meals, preferences, travel restrictions, apparel, any other information.
    - Works well and directly with Program Manager, Directors, and Team Managers to manage all lists and schedules.
- Skills necessary: Word, Excel, and the Google Suite (Docs, Spreadsheets, Slides). If not proficient, is willing to learn these programs.

Finance Lead:

- At the start of the school year, works directly with the Team Managers, Finance Mentor, Program Manager and Operations Director to review the prior years budget and create a new team budget for the coming school year and FRC Season.
- Works directly with the Team Managers to ensure changes (inflows and outflows of funds) in the Robotics Teams ASB account are accurately recorded in the appropriate Google Sheets.
- Keeps our Google Sheets team budget sheet updated at minimum on a weekly basis, but ideally every meeting.
- Keeps track of who has bought items and turned in receipts and who needs to be reimbursed.
- In collaboration with the Team Managers, approves and denies team purchases, especially if not included in the original budget.
- If required, keeps a Bill of Materials (BOM) for the competition season robot.
- Is well versed in Excel programming or is willing to learn it well.

Fundraising Lead:

Works with all team members to:

- Organizes fundraising team to fill out grants, contact corporations, and run other fundraising campaigns
- Works with the Budget Lead and team Program Manager and directors to determine fundraising goals
- Looks into new methods of fundraising
- Sends thank you letters before 2 weeks of receipt
- Designs material for fundraising, including brochures, posters, etc.
- Keeps up sponsor relations

Communications Lead:

Works with a small team of students to:

- Prepares a business plan/team branding upon consultation with Program Manager & directors.
- Post on social media to promote Team 972 and highlight team events and activities that may be of interest to followers of the team.
- Ensures the website is regularly updated to promote Team 972 in the best possible way to the followers of the team and other FRC Teams interested in learning more about Team 972.
- Ensures the students on the media team are taking and uploading photos and videos to the Google Drive on a regular basis.
- Ensures branding standards are updated and followed.
- Ensures that a robot release video is completed by our first regional competition.
- Ensures that a season recap video is complete 2 weeks after our final competition. (latest end of April).

- Organizes a team photo yearly and uploads it to the team website.
- Ensures that t-shirts are designed and ready to be ordered by the end of January ahead of the teams first regional competition.

Competition Team Roles and Selection

Roles during competition are different than the roles during the year. During competitions, there are specific roles to field and run our robot, and there are specific roles to enable quick decision making.

During competitions, DVC decisions are suspended as there is not enough time to use this process. There are various competition executives that have the authority to change, modify, alter any strategy, tactics or robot modifications.

For all positions, they will either be try positions, or assigned positions by the team managers. For assigned positions, input by students is welcome.

There will be 3 main groups of students during competition: Strategy Team, Drive Team, Pit Crew.

The following table shows all the student roles that must be satisfied for every competition:

Drive Team	
Position	**Method Assigned**
Driver	Tryout
Operator	Assigned
Human Player	Assigned or Tryout (depending on task)
Drive Coach	Assigned
Technician	Assigned

Pit	
Position	**Method Assigned**
Software Lead (Pit Executive)	Assigned
Hardware Lead (Pit Executive)	Assigned
Mechanical & Assembly (multiple)	Assigned
Electrical, Pneumatics Assembly (multiple)	Assigned
Pit Safety	Assigned

Strategy	
Position	**Method Assigned**
Strategy Chief	Assigned
Strategy VP	Assigned
Scouting Manager	Assigned
Scouters (multiple)	Assigned

Each role is described in more detail below.

- **Strategy Team**
  The strategy team is comprised of the Strategy Chief, Scouting Lead, Strategy VP, and Drive Coach. The Drive Coach serves as the main liaison between Strategy Team and Drive Team.

- **Strategy Chief**

  This person is the ***face of our team*** and must be very assertive, have excellent communication skills, and know the rules and our robot's capabilities extremely well. Before every match, the strategy chief will look at data (scouting and external sources) and talk to the scouting lead, strategy VP about our opponents and alliance partners. They will embrace the use of data to objectively make their game play decisions. They will set up meetings with representatives from our alliance partners to determine strategy. They will meet with the Drive Team and get everyone on the same page. The Drive Team is ***required*** to follow the directives of the Strategy Chief. The strategy chief determines the match strategy and is our team's direct representative to other teams. Specific Duties of Strategy Chief.
  - Is in charge of the whole drive team, scouting team, and strategy team.
  - Directly work with Strategy Mentor on all strategy operations. Is easily ***coachable.***
  - Directly discuss with Pit Executives the status of the robot.
  - Is easily able to give directives (assertively and politely) to the Strategy VP, Scouting Manager, and Drive Coach.
  - Has absolute mastery of our Competition Match/Strategy Procedures. Has this set of procedures memorized, knows what to do and when.
  - Has absolute command of how to easily access all scouting information in a way that is presentable to to the entire team. This information is accessed and presented very quickly during competitions.
  - The strategy chief will lead the creation of our picklist. During alliance selection, they will make the decision (be present on the field) on whether to accept or turn down offers from other teams or will be the person inviting teams to our alliance. Being the face of our team, the Strategy Chief will always wear our team's apparel, and will have a "972 Strategy Chief" hat that other teams can identify them by.
  - The Strategy Chief needs to have ***chicanery*** (if you don't know that word look it up) to "game" the system (legally) and manipulate the game to win it for the team. This is definitely an outside the box thinker who has an absolute command of the game and how it is played.
  - Requirements: Attend all Strategy meetings during Fall/Comp season. Have a good demeanor and good work habits. Excellent talking/speaking skills as they will be, unprompted be walking up to teams to arrange meetings, ask questions, and get information. Excellent ability to access and process data from our scouting app and other sources of information. Decidedly coachable and willing to learn from Strategy Mentor(s).

- **Strategy VP (assigned)**

  The Strategy VP is directly working with the Strategy Chief in all strategy work. The Strategy VP is answering to the Strategy Chief and, many times, doing tasks for the Strategy Chief (only because the Strategy Chief is simultaneously doing other tasks). This could be from checking in with other teams to arrange meetings, getting specific team information from scouting or other information sources, or directly advising the Strategy Chief on what strategy to perform during a particular match. The Strategy VP is highly knowledgeable on strategy, data used in strategy, and baseline knowledge of

other teams. The Strategy Chief values and considers information of the Strategy VP, and while the Strategy Chief has the final call, many decisions are discussions between the Strategy Chief and the Strategy VP. In a sense, the Strategy VP is acting as an ***expert consultant*** to the Strategy Chief. Given that, the Strategy VP has a firm understanding of our capabilities and the game.

- Requirements: Attend all Strategy meetings during Fall/Comp season. Have a good demeanor and good work habits. Excellent talking/speaking skills as they will be, unprompted be walking up to teams to arrange meetings, ask questions, and get information. Excellent ability to access and process data from our scouting app and other sources of information. Decidedly coachable and willing to learn from Strategy Mentor(s).
- Has absolute command of how to easily access all scouting information in a way that is presentable to to the entire team. This information is accessed and presented very quickly during competitions.
- The Strategy VP is backup Strategy Chief.

- **Scouting Manager (assigned position)**

  The scouting manager maintains and coordinates the scouting app, creates scouting shifts, notifies people of their shifts, and ensures the completeness and accuracy of data during the match. They provide data and work closely with the Strategy Chief and Strategy VP in order to make match strategy and determine alliance selection. They will be in the stands watching all matches and should have a good idea of the performance of many teams. It is ideal if they should have programming experience but not required. All drive team applicants agree to attend all games including Houston if we make it.

  - Requirements: Attend all Strategy meetings during Fall/Comp season. Have a good demeanor and good work habits. Excellent management skills as they will be directing a group of 6-7 scouters. Excellent ability to access and process data from our scouting app and provide it to Strategy Chief/VP.

- **Drive Team**

  The Drive Team is comprised of: Operator, Human Player, Technician, Drive Coach, Driver. As a basic requirement, all Drive Team members:

  - Agree to attend all competitions, including Houston, when they get selected/approved for their position.
  - Agree to follow all instructions of the Strategy Chief.
  - Agree to work well together as a cohesive unit.
  - Are coachable by the Strategy Mentor.

  - **Drive Coach**

    Duties of Drive Coach

    - The drive coach is a ***performance based job***. The drive coach is, exactly as stated, a ***coach for the driver and operator*** during the match. They must always keep track of the time remaining, the points in the match, opportunities to capitalize on, and should weigh these factors when making decisions. A drive

coach is constantly communicating and giving the driver/operator feedback and pointers on what to play or what to do next.

> *While the driver/operator's job is solely focused with the art and skill of driving and what is happening **immediately** in that moment, the advanced thinking, where and what to do next, and next steps is left up to the drive coach to do.*
>
> The driver/operator head should be clear about finishing accurately and precisely the challenging task at hand, and unconcerned on imminent future steps as the drive coach is planning that out.

    - For example, say 30 seconds is left on the clock, the driver/operator will ***not be thinking*** if there is enough time to go to endgame or score another game piece, but the drive coach ***has to***, and at this point, the drive coach has already mentally calculated the options and come to a conclusion. For example, the drive coach has already mentally calculated if there is enough time to score another piece and still go to endgame, or perhaps the match is already won and go to endgame to get endgame RP, or forego endgame to maximize RP of scoring, etc, etc. The drive coach has already communicated this to the driver/operator.
    - Drive coach should know when to allow the driver to play their game without micromanaging. If the driver is repeatedly doing the same cycles, allow the driver to do so. No need to call out a next task if the driver/operator is already doing that.
    - Drive coach needs to think quick to call out a new strategy should the need arise. This should be an ***unusual*** situation. Meaning the Strategy Chief has laid out multiple contingency plans ahead of time. Regardless, if a change in strategy is required (robot breaks, etc) Drive Coach thinks quick to enact backup plan.
- One absolute pre-requirement of the the drive coach is that the need to ***TALK*** and be easily and clearly understood without ever needing to be asked to repeat. Regardless of how skilled the drive coach is, if this person does not possess this attribute, a new drive coach needs to be sought. In summary, drive coaches need to be ***assertive, willing to talk and engage (sometimes with conflict and sometimes dealing with other adult mentors that are drive coaches) with other teams to assert what our team needs in an alliance.*** If a student cannot be assertive, and speak assertively when needed, they cannot be drive coach. (i.e. read between the lines, you are ***loud*** when needed)
- The drive coach is ***not creating game plans or enacting plays***, but following the plays of the Strategy Chief. The drive coach should work closely and follow all directives of the strategy chief.
- The drive coach also needs to be assertive in challenging calls made by judges ***immediately*** after a match happens.

- **Operator**

  The operator is the second best driver. As such, they are the back up driver. While the driver controls the drivetrain during a match, the operator controls all other subsystems on the robot. The operator must have proven abilities to work

and communicate well with the driver, drive coach, and strategy chief, and must dedicate lots of time during build season for practicing with the driver. The operator must remain calm and be able to deal with the stress, pressure, and exhaustion of many matches during the day. The operator needs to know the rules extensively (fouls, tech fouls, safe zones, pinning), and must have good hand-eye coordination and know the controls exceptionally well. The operator must work with the programming team to design the operator controls. The operator must have a good idea of the capabilities of the robot and what would break the robot (how vulnerable is the robot when the intake is out? will the robot tip over when the elevator is up?).

- **Technician**

  The technician will be one of the hardware or software directors. This enables the hardware or software director to be with the robot as much as necessary, and furthermore, to get an upclose view of the match as the robot is performing.

  The technician must be able to set up the robot and turn it on. The technician should be able to easily pick up and move the robot on field/off field. The technician should also understand basic electrical and be able to push the robot cart. They should be assertive and should ask mechanical/programming people in the pit if they do not know the technical state of the robot.

- **Driver**

  The driver, simply, drives the robot. While the requirements and description for this position are not large, this is one of the most important positions on the team. It is essential that the team identifies the best driver that the team has. This will be selected using an objective, drive-based challenge described in another document. The driver has the responsibility to start practicing driving as soon as there is a robot and course available (January/February). The driver needs to work closely with the programming team to identify an easy set of controls that they can use to drive the robot. The driver does not, however, decide what the robot does. The driver follows the instructions of the Strategy Chief and Drive Coach.

- **Human Player (Depends on the Year)**

  Depending on the type of game, the human player may be a position they try out for or they are assigned by the CC. The human player needs to have the physical capabilities to execute the necessary interactions during an FRC game.

- **Selection of Application-Based Positions on Drive/Strategy Team**

  Application process for the drive team (not including driver) will start in December. People who want to join the drive/strategy team will submit an application. The first part

of the application is pre-approval by the Team Managers. The Team Managers will check if the student is in good standing in all aspects of being a team member. Additionally, the Team Managers will ensure that the applicant is aware of all the requirements and expectations of the position.

Driver/Operator will be decided by tryouts. Select students and mentors will make a fair process to decide the Driver/Operator. Every student that wants to try out will get a chance.

- Driver Tryout Steps
    - **Round 0:** EVERYONE interested on the team tries to drive with NO obstacles (1 min/person)
    - **Driver Tryouts:** The top 5 applicants are selected based on merit. They will get scheduled, additional, practice at different times. From this pool we will select our driver and Operator/backup driver. This should happen in January.

- Driver Scoring
    - Drivers are ranked in ascending order by their score
- Practice Maps

  Here. CADs

  Inspiration/How to Use:
  https://team2168.org/images/stories/OrganizationDocuments/Driver%20Training_8.22.11.pdf

Other Selecting Guidelines:

- All positions need to (eventually) get above a 90% on the rules final. This is important as all of the drive team needs to know the rules very well.
- You may be released from the position by the Team Managers for inadequate job performance or other inadequate behavior.
- Due to the fact that the drive team needs a solid score on the rules final, this team will be decided by the end of Build Season Week 2 after all retakes have been given.

- **Pit Team**

Pit Executives

The “Pit Executives” are the Software Director and Hardware Director. The responsibilities and tasks of the two “Pit Executives” are

- All robot decisions. Have the final say on what work is being done on the robot and what sequence to do the work.
    - Any work that ***modifies the "basic" strategy*** of the robot needs to be brought up with the Strategy Chief.
- Managing, directing, and planning all work being done on the robot at competitions.

- In partnership with the Strategy Chief, is planning a sequence of work during competitions
    - For example, both will plan a sequence of tasks between matches that will be done with the robot
- Directing and communicating the work to pit personnel of what tasks need to be done.
- If both Robot Executives mutually disagree on a decision, the tiebreak will be decided by (listed in order of priority and if the first person is not immediately there it will go to the next person on the list)
    - Strategy Chief
    - Pit Mentor.
- Must be at the competition site the entire competition.
- Must attend all matches and first-hand observe what is happening with the robot. (Ideally seats are saved and reserved for them)
- Follow the robot to the practice field.
- Need to listen and accept feedback from other pit personnel and pit mentors.
- Keep everyone apprised of all decisions. Will be assertively vocal in doing so.
- Check in with Strategy Chief and Drive Team to get direction on what to work on.
- Are assertive, vocal, respectful, constantly communicating, and not timid in giving instructions to pit personnel.
    - If Robot Executives are not performing management then this will default to the Pit Mentor.
- Are always planning the future and the next series of steps that need to happen with the robot and robot/drive team preparation.
- Will speak respectfully to all pit personnel.

Pit Safety

This position is as decided by the teacher and they will wear the Safety Button. This position used to be automatically given to the Shop Manager, but now they are assigned to a person who can fulfill hardware duties in the pit. This will be assigned by the teacher to a person who is already assigned to be in the pit; so this will not be a new person.

- First and foremost be a valuable mechanical/electrical/programming/assembly pit member
- Manage and direct the safety and cleanliness of the pit.
    - Ensure hair ties, safety glasses, and other protective equipment are worn.
    - Keep floor area clear of items
    - Keep table tops clear
    - Directing people to put away tools DIRECTLY after they use them.
    - Ensure any and all water bottles are labeled.
- Work towards any safety award we are going for.
- Is one of the hardware pit personnel. They may be the same person as Pit Executives.

- This person ensures that the pit is staffed at all times. They are staffing it, or delegating it to others. This person HAS to delegate it to others and is REQUIRED to take a couple breaks a day.
- They will post a schedule of
    - When and which students are working in the pit
    - Match schedule
    - When and which mentors are pit mentors

Pit Awards Presenter

- A person in the pit dedicated to presenting any and all awards we are going for.
- This person will be a good speaker and be able to speak with judges and other personnel clearly and succinctly.
- They have a clear understanding of our robot and team model.

Pit Mentor

- Is actively involved in all decision making discussions.
- Is the primary Pit Safety and Org executive (most tasks and decisions will be completed by Safety and Org student). They can give any directives that are related to our equipment, organization, or safety. They may stop work on the robot to ensure these items are done.
- Follows the robot everywhere: to the practice field, pit, etc. Watches all matches to fully observe robot performance.
- If there is more than one pit mentor for the competition then a schedule will be made and posted in the pit.
- Is a full member of the pit, and thus allowed in the pit, but when not directly involved is posted slightly outside the pit.
- Will inspect/test the robot to gather information. This means touching the robot to ensure parts are as they should be installed. After inspecting the robot, will give directives/advice.
- Will not work on the robot.
- Is allowed and encouraged to touch the robot for the following scenarios:
    - Students are incorrectly doing a task and it needs to be demonstrated.
    - Inspecting/testing robot. Checking integrity of robot.
    - There is a safety reason to intervene.
- Will not clean, organize, set up, but ***will*** direct these tasks if they are not being done.
- Will direct the pit team and individuals if the PitExecutives are not doing so. PitExecutives may challenge or modify Pit Mentor's directives.
- Will respect the final decision of the Pit Executives.
- Will speak respectfully to all pit personnel.

Adult Roles: Team Managers

Team Managers

- Is the primary lead of the robotics team and the school representative. Along with the Industrial Technology Teacher has executive decision making abilities with regards to all team decisions.
- Drives the structural organization of the team with direction from Mentor Council.
- Adopts lead mentor role for FRC purposes
- Works with student leads to set preseason and postseason curriculum and projects
- Works with student leads to set expectations and process during build-season
- Works with mentors to get support in curriculum and build-season support
- Works with mentors to get support for FRC-related planning and execution
- Conducts design reviews during build season
- Posts team roster with photos for attendance during build season
- Posts list of students authorized to use machines in absence of metal-shop teacher
- Responsible for any disciplinary action for students (shared with metal-shop teacher).
- Responsible for all human resources issues: interpersonal issues, complaints, staffing, attendance, etc. (Shared with metal-shop teacher).
- Works to grow the program sustainably, increase diversity of the student body, and secure educational materials and facilities.
- Is the administrator for student communication forums related to robotics. Such as slack.
- Is the facilitator for all meetings: ironclaw all, design reviews, mentor council, etc.
- Creates lists of mentors and trains mentors for shop access.
- Creates the school calendar for the year

Industrial Technology (Metal Shop) Teacher

- Working with the robotics teacher, has executive decision making abilities with regards to all team issues.
- Teaches students on safe use of machines and certifies students for using machines
- Interfaces with manufacturing leads on use of tools and materials during build season
- Interfaces with robotics teacher and parent mentors about student machine use

Adult Roles: Mentors

Types of Mentors

Parent mentors and volunteers are organized into three groups, each with a lead mentor. These are:

- **Technical Mentors**

  These mentors work directly and advise students on all technical aspects such as robot design, prototyping, manufacturing, assembly, programming, and testing. During the build season, they help supervise students during the build, participate in design reviews, provide advice about technical planning/execution, and ensure that school rules are adhered to. These mentors may also participate in pre-season class instruction and coaching. They are approved by the district (TB tested and fingerprinted). These mentors can supervise students.

  a) **Tech Mentor A:** These mentors are cleared by the school to open/close the shop facilities and supervise students. These mentors may run outreach events with students. For Tier A, the school has decided that the minimum age is 30 years old to fully supervise students and be in charge of facilities.
  b) **Tech Mentor B:** Mentors help out with all technical mentors aspects, work directly with students, but do not open/close shop.

- **Logistical Mentors**
  These mentors work directly with the teacher and sometimes with students in coordinating much of the logistics in running the team. This could be travel, finances, meals, coordinating other mentors, etc. These mentors are also TB tested and fingerprinted by the district.

- **General Parent Volunteers**
  These adult volunteers help out by providing meals, giving rides, and other activities that do not involve working or supervising students.

Our current assignment to mentor positions is listed here.

Here is a table of duties and requirements per type of Mentor/Volunteer

Mentors	Can Supervise Students	Needs Clearance From School	Works with Students	Has Technical Expertise	Time Commitment	Notes (Described more in each section below)
Tech Mentor A	Yes	Yes	Yes	Yes	Large	This mentor also includes various operation mentors such fundraising,
Tech Mentor B	No	Yes	Yes	Yes	Medium	Same as Tech Mentor A but no student supervision
Logistical Mentor	Optional	Optional	Not necessarily	Not necessarily	Medium	Usually works with team managers in team management.
Shop Manager	Yes	Yes	Yes	No	Medium - Large	Does not need to be technical.
Parent Volunteer	No	No	Not really	No	Small	Helps the team with jobs and duties.

Technical Mentor Roles

The team ideally needs the following mentors to help the team thrive. These positions need to be filled if Team 972 wants to be a competitive team like other local high-performing teams. If each position is fully filled, we may not need more, but there can be multiple mentors per position.

1. ***Mechanical/Manufacturing/Hardware Mentor*** *(2 to 3 mentors ideally)*
2. ***Electrical/Hardware Mentor (****1 to 2 mentors ideally)*
3. ***Software/Programming Mentor (****2 to 3 mentors ideally*

Descriptions are listed below.

1. **Mechanical/Manufacturing/Hardware Mentor**
   - **Description of Duties**
     - Coaches, advises, and trains students in the mechanical team (CAD and Assembly) with design principles regarding the following:
       - Designing static elements of robot with integrity:
         - Structural frame: gussets, structural integrity, weight, moment of inertia.

                - Proper usage of different materials, material properties, and proper application (wood, metal, plastic)
                - Fasteners. Different use, application, and adequate installation.
            - Designing dynamic elements of the robot with efficiency:
                - Electric motors and properties. (in conjunction with Electrical Hardware Mentor)
                - Gears: gear ratios, manipulating torque and speed
                - Drivetrain components: sprockets, chain, wheels.
                - Pneumatic elements: pistons, air tank, solenoid, compressor.
                - All other dynamic components in that year's robot: shooters, intake, game piece manipulation
    - Works (in conjunction with electrical and programming mentor) and students in creating FRC mechanical troubleshooting flowcharts if robot is not operating as expected. Ensures the students know how to use these flowcharts.
    - Optional/Bonus Duties
        - Has skill in Computer Aided Design (CAD) and proper CADding principles
        - Has skill in Manufacturing. Both manual and Computer Numerical Control (CNC) machines (CNC Mill, Router, Lathe)
        - Is able to approve purchase orders
    - Attends at least 1 competition to be "pit mentor", and advise students in the pit working on the robot.
- **Time Commitment**
    - Off Season: Average 3 hours per week depending on individual project status. Could be up to 4-5 hours depending on your involvement and current projects.
    - Build Season: Minimum 4 hours per week. Average 5 hours depending on project status. Attend at least 1 competition to act as pit mentor.

2. **Control Systems & Electrical Hardware Mentor**
- **Description of Duties**
    - Coaches, advises, and trains students in the design of electrical control system components. Works directly with the mechanical team in design, and coordinates with the software team/mentor in proper software application.
        - Provides guidance related to the design, accessibility, and serviceability of all electrical control systems components:
            - Guides in design of control system electrical board for safety, accessibility, and serviceability.
                - RoboRIO, Power Distribution Panel (PDP)/Power Distribution Hub(PDH), Voltage Regulator Module, Radio, Camera, Robot Signal Light, Solenoids, Motor Controllers, Pneumatics Control Module
            - Proper CAN Bus wiring

            - Guides students in the various different wires/connectors and their appropriate usage. Proper labelling.
        - Works (in conjunction with mechanical and programming mentor) and students in creating FRC control system troubleshooting flowcharts if robot is not operating as expected. Ensures the students know how to use these flowcharts.
        - Helps with design, training, servicing, and implementation of robot sensors (digital and analog)
            - Camera, color sensors, vision sensor (limelight), all touch sensors (limit/bump switches), encoders, potentiometers, light sensors, distance sensors (LIDAR).
        - Trains students in electrical skills and theory
            - Soldering, crimping, wire identification.
            - Electrical theory as necessary. Calculating voltage, resistance, current, power, etc.
            - Power budget within the robot.
            - Battery energy and voltage
    - Is able to approve purchase orders
    - Attend at least 1 competition to be “pit mentor”, and advise students in the pit working on the robot.
    - Optional Bonus Skills:
        - Has familiarity with FRC Competition Control Systems. If you are not familiar or need a quick refresher checkout - https://docs.wpilib.org/en/stable/index.html
- **Time Commitment**
    - Off Season: Average 3 hours per week depending on individual project status. Could be up to 4-5 hours depending on your involvement and current projects.
    - Build Season: Minimum 4 hours per week. Average 5 hours depending on project status. Attend at least 1 competition to act as pit mentor.

3. **Software/Programming Mentor**

- **Description of Duties**
    - Works with the programming team in training, coaching, coding best practices and design. Works directly with Electrical/Hardware Mentor in implementation of electrical components for coding purposes.
        - Works with the programming team to create new and advanced java programming curriculum.
        - Creates and teaches coding best practices to the programming team.
            - If familiar with FRC Control Systems extends the best practices to include FRC control system programming.
        - Works (in conjunction with mechanical and electrical mentor) and students in creating FRC control system troubleshooting flowcharts if robot is not operating as expected. Ensures the students know how to use these flowcharts.
        - Attend at least 1 competition to be “pit mentor”, and advise students in the pit working on the robot.
    - Optional Bonus Skills:

        - Has familiarity with FRC Competiton Control Systems and programming associated with these control systems. If you are not familiar or need a quick refresher checkout - https://docs.wpilib.org/en/stable/index.html
- **Time Commitment**
    - Off Season: Average 3 hours per week depending on individual project status. Could be up to 4-5 hours depending on your involvement and current projects.
    - Build Season: Minimum 4 hours per week. Average 5 hours depending on project status. Attend at least 1 competition to act as pit mentor.

4. **Fundraising Mentor**

This mentor:

- Works with team managers and finance mentors to assess what our current balance is at the beginning of the year and what fundraising target should be set.
- Using the fundraising target this mentor works directly with students in creating, planning, and organizing all the fundraising events of the year.
- Sets up and monitors the logistics of fundraising events. Attends fundraising events.
- This mentor needs to be cleared by the school to work with students.

Logistical Mentors

1. **Parent Team Coordinator (2 Positions: Primary and Secondary)**

The primary role of the Parent Team Coordinator is to help coordinate non-technical, operational issues to help the team function. They do not need to work with students directly. They will work closely with the Team Managers of the class. It is important to note that this position is as much (or more) focused on ***recruiting other volunteers*** to help complete these tasks as much as completing them themselves.

- Helps create and maintain volunteer mailing lists of parents that can help with all these tasks. Share this list with the teacher.
- Manages all food events during build season and during field trips.
- Helps maintain student roster along with allergies, medications and special needs
- Arrange accommodations, travel arrangements, meals and snacks for competitions
- Organize pot-luck for kick-off brunch
- Organize build season meals, snacks & drinks - based on student work schedule
- Organize end-of-season party

Specific Away Field Trips
Works with the teacher to help manage the following tasks:

- Has a contact list, roster and information of all students and adults attending
- Disseminate information to all people during the whole field trip
- Manage all food events.
- Helps book accommodations
- Helps book transportation. Both to/from competition and while at the competition

2. ***Build Season Coordinator/Manager***

- **Description of Duties**
    - Helps set up after hours mentor supervision schedules for work spaces.

        - Is adept at opening/closing procedures of shop (Will be trained by teacher)
        - With teacher establish base work calendar days/hours by December
        - Weekly during build season – confirm upcoming needs and adjust as necessary
        - Assist Teacher in identifying Adult Mentor openers/closers
        - Ensure openers/closers are trained on procedures
        - Ensure adequate coverage of openers/closers, based on agreed work schedule.
    - Ensure proper management of facilities.
    - With the teacher, helps manage student attendance and participation during the build season.
    - Helps at one or more competitions.
    - If a tech mentor, may approve student purchases during build season.
    - Attend at least 1 competition to be “pit mentor”, and advise students in the pit working on the robot.
- **Time Commitment**
    - Off Season: Average 3 hours per week depending on individual project status. Could be up to 4-5 hours depending on your involvement and current projects.
    - Build Season: Minimum 6 hours per week. Average 8 hours depending on project status. Attend at least 1 competition to act as pit mentor.

3. ***Trip Logistics Mentor***

- Ideally this mentor has a truck that may be used to tow our trailer, but this position does not necessarily need to have this. The trailer may be towed by another volunteer.
- Sets up and manages trip logistics.
    - Shipping of technical materials. Creating a crate if necessary.
        - If we attend World championships in Houston, this mentor helps in shipping two major items separately
            - Our Pit and materials. Mentor works to secure sponsoring so this is covered by an organization.
            - Shipping robot via FIRST’s policies.
    - Manages our travel equipment and process: trailer, load in, load out.
    - Works to set up pit organization and logistics.

4. FIRST Team Liaison & Lead Finance Coordinator

- Set up FIRST FRC program registration of all students.
- FIRST related grant and re-grant management.
- FIRST Regional Competition registration.
- FIRST Nationals/World team and housing registration should the team qualify.
- Scholarships from FIRST.
- Oversees the Budget and Fundraising Mentor’s who work with students to maintain the budget and fundraising worksheets. These mentors assist with the collection of money and managing the budget spreadsheet
- Set up a regular schedule to meet with finance student lead and update the budget.
- Submit reimbursements to ASB

Competition Mentors

Pit Mentor

- Works with the pit on anything mechanical/robot related.
- Is in charge of all technical pit mechanical personnel:
  - Software Pit Executive
  - Hardware Pit Executive
  - Mechanical Assembly Team (including any “niche” roles: swerve assembly, elevator assembly, etc)
  - Control Systems Assembly
  - Student Pit Manager & Safety
- Manages all pit shifts
- Allows students to run the show if everything is going well. Allow students to bring up issues first. Allows pit executives to give directives. If something isn’t being done or addressed, at that moment they speak up and give guidance, suggestions, and if necessary, directives.
- One primary Pit Mentor, but could be more depending on subfield (software, hardware, control systems, etc).
- Is actively involved in all decision making discussions.
- Is the primary Pit Safety and Org executive (most tasks and decisions will be completed by Safety and Org student). They can give any directives that are related to our equipment, organization, or safety. They may stop work on the robot to ensure these items are done.
- Follows the robot everywhere: to the practice field, pit, etc. Watches all matches to fully observe robot performance.
- If there is more than one pit mentor for the competition then a schedule will be made and posted in the pit.
- Is a full member of the pit, and thus allowed in the pit, but when not directly involved is posted slightly outside the pit.
- Will inspect/test the robot to gather information.
- Will not work on the robot.
- Is allowed and encouraged to touch the robot for the following scenarios:
  - Students are incorrectly doing a task and it needs to be demonstrated.
  - Inspecting/testing robot. Checking integrity of robot.
  - There is a safety reason to intervene.
- Will not clean, organize, set up, but ***will*** direct these tasks if they are not being done.
- Will direct the pit team and individuals if the Pit Executives are not doing so. Pit Executives may challenge or modify Pit Mentor’s directives.
- Will respect the final decision of the Pit Executives in terms of robot decisions.
- Will speak respectfully to all pit personnel.
- Is there for load in, and load out pit.
- Works on all mechanical parts/issues of robot.

Strategy Mentor

- Works with Strategy Drive Team. Anything logistical related to the game play.
- Meets with Drive/Strategy Team after every match.
- In charge of all Drive Team and Strategy Team personnel:
  - Drive Team
    - Driver

        - Operator
        - Human Player
        - Drive Coach
        - Technician
    - Strategy Team
        - Strategy Chief
        - Strategy VP
        - Scouting Lead
        - Scouters
        - Videographers
- Up to two primary Strategy Mentors
- Allows students to run the show if everything is going well. Allow students to bring up issues first. Allows Strategy Chief to give directives. If something isn't being done or addressed, at that moment they speak up and give guidance, suggestions, and if necessary, directives.
- At mentor's discretion, should guide and/or oversee any pre-match discussion either internal or external (with other team representatives).
- Shall be aware of the current overall state of the robot's subsystems as they pertain to match strategy
    - Example: A Pit Executive notifies the Strategy Mentor that the outtake is having issues shooting balls from the far tape line for this match. Thus the robot can only shoot reliably from up against the alliance wall. This drives the match strategy for the upcoming match in that other teams should consider shooting from the tape line in order to minimize interference.
- Shall respect the final decision of the Strategy Chief and Strategy/Drive Team, by extension, as it pertains to match strategy unless said strategy violates team handbook guidelines or the competition rulebook.
- Shall not remain in the pit area for extended periods of time except to obtain status updates about robot functionality as they pertain to match strategy
- Shall not work on the robot.
- Shall speak respectfully to Strategy/Drive Team

Appendix C: Application Process to Join the Team

Application Process

Timeline	Process
Feb/March	Sign up for the robotics "class". This does not guarantee you a spot on the team but puts you on the list for an application
March	● All students attend the mandatory informational meeting. ● Students submit written application
Mid April	● Teacher recommendations due ● Applicant Interviews
Early May	Students receive acceptance notification.

How the Applicants are Scored

Students are chosen based on a point system. There are 150 points possible.

The scoring is as follows:

- Written application (30 points)
    - The written application will be read blindly and assigned a point value based on quality of responses.
- Teacher recommendations (2 of them. 50 points)
    - The teacher recommendations form will be read blindly and assigned a point value. Each recommendation will be out of 25 points.
- Interview (60 points)
    - Students will interview in front of Team Managers and team mentors. Each interview will be scored based on quality of responses.
    - Note: Due to the huge number of applications the team receives yearly (over 80 often), and the lengthy nature of the interview process, the team Team Managers reserve the right to fast-track any applicant who has previously been on the team, or who was in any of their classes, and has demonstrated proficient traits to skip any portion of the application process the Team Managers see fit.

Given that we are a student-led team, it is fundamentally imperative to the team that we have a wide representation of grade levels on the team. The team's survival depends on having a balance of experience from veteran to new students. Given that requirement, out of 50 students we attempt to fill *at least* 12 positions in grades 10 -12.

Given our need to have a diverse team in terms of grade level, we have a two-part system for accepting students on the team:

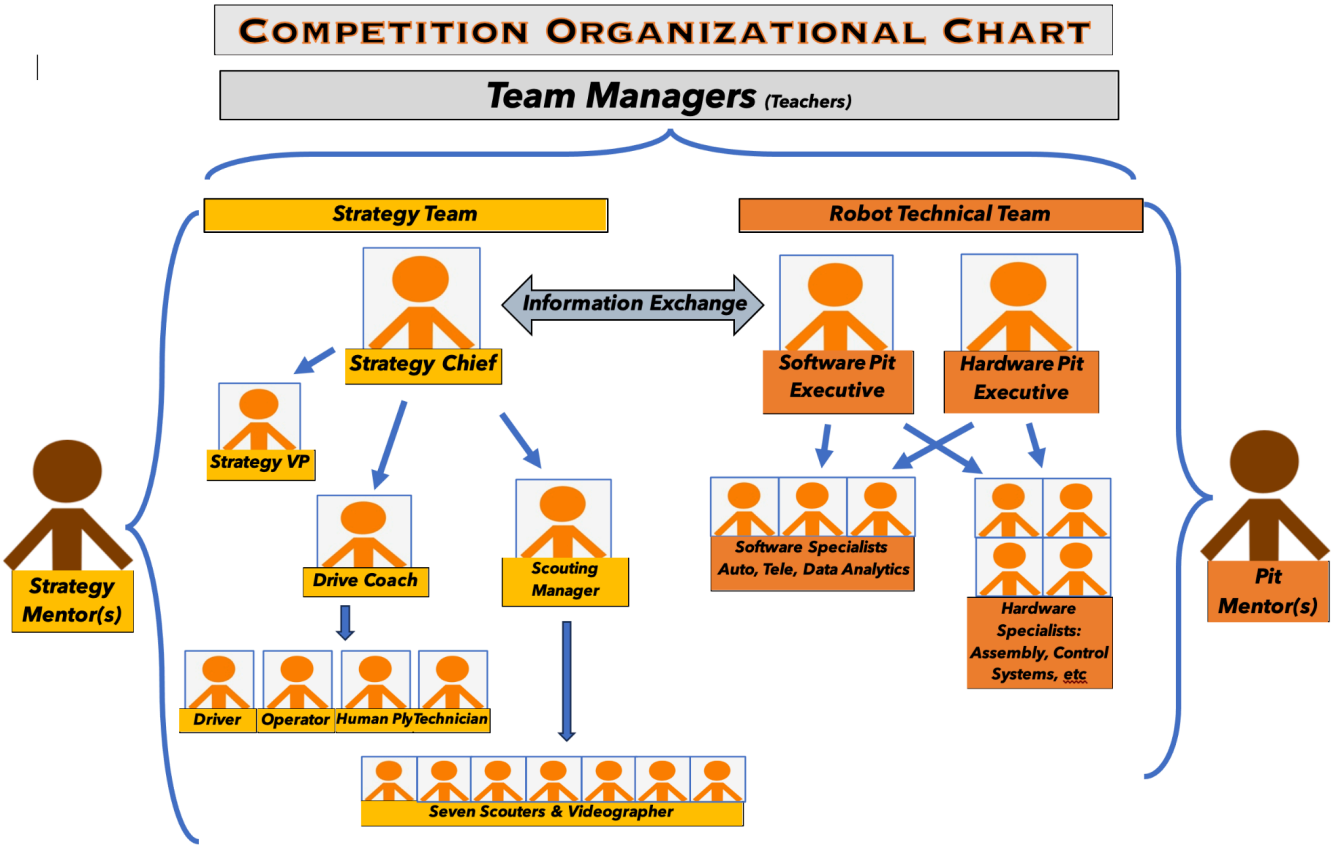
1. **Automatic Admission Spots (36 of the 50 spots).** All the positions in this category have achieved, after applying, *higher point score than the average* of all students who have applied. Within this limited group, 12 positions are given to the top point earners in each of the grades 10-12 respectively. If we do not achieve Automatic Admission Spots for a certain grade, those extra spots go to the General Applicant Pool category. For example, if we only get 10 applicants in grade 11 who's average score was above the average, then we only accept 10 and the remaining 2 spots go to the General Applicant Pool.

2. **General Applicant Pool (14 spots).** These remaining spots are allocated by top points regardless of grade level (freshmen included).

Appendix D: Competition Attendance Priority List & Rules of Selection/Funding

Competition Organization Chart

The team has a specific set of students who attend competitions. During all competitions our regular chain of command is changed to our Competition Org Chart as shown below.



Notes on Attending Competitions:

A limited team may often be selected to attend certain competitions. The selection of these team members will be as objective as possible, but some subjective evaluation may need to take place. These criteria are:

- Position: Obviously required positions such as driver, driver coach, operator, pit executives, etc are going because they have shown to be the best for these positions. (see required positions below)
- Time and hours put into the team in conjunction with a subjective evaluation of the quality of work done by these students. Students who put in the most time and effort should be considered first to attend competitions.
- Quality and time put in throughout the years. Holistically, if a student has worked well for the team over multiple years, they are a long-standing senior or junior and have not been able to attend previous competitions, they may be chosen over younger students to attend the competition.
- If a mentor who is a parent is traveling with the team, and an official chaperone of the competition, their child may attend for free. The team views the effort and work put in by mentors as very valuable, as without the chaperone's help the whole team would not be able to attend. As such, this team believes their child should travel for free. This student will not take the place of any of the students listed above, but will come ***in addition*** to the students who qualify.

Rules Regarding how Competitions Attended by th

The following are Los Gatos High School and State Education Code rules regarding field trips:

- Whatever size team the Team Managers have decided will attend the competition, either enough funds are acquired for the ***whole team*** to attend, or no one attends and the whole trip is canceled. It is an all or nothing situation. At any point, the Team Managers can cancel the field trip due to lack of funds.
- All money taken from parents is a ***voluntary donation***. There is no required fee for parents to pay for the students that are attending. No money needs to be exchanged for any participation in any school free program.
- There is no “pay to play”. Meaning that if a student was not selected to attend, parents can’t pay for the student to join the team on the trip. Students aren’t selected to attend based upon the ability of their family to pay for their participation.
- You may see the Ed Code rules for field trips that the previous rules are based on here.

Competition Attendance Priority List

As mentioned above, we may only have the means to take a select group of students to a competition. Below is an example of a competition attendance priority list for distant/costly competitions. It may change depending on the competition and specific needs, which are made based on the team’s robot; not based on particular student preference.
An example is below.

Primary Required Positions (21 Student Positions)				
Student #	**Position Name**	**Student Name**	**Secondary Position Assigned**	**Third Position Assigned**
DRIVE TEAM				
1	Driver			
2	Operator			
3	Human Player			
4	Drive Coach			
5	Technician/Pit Software			
PIT TEAM				
6	Pit Executive - Hardware			
7	Pit Executive - Software			
8	Hardware - Maintenance/Repair			
9	Software: Auto & Robot Data Analytics			
10	Control Systems - Maintenance/Repair			

STRATEGY TEAM				
11	Strategy Chief			
12	Strategy VP			
13	Scouting Manager			
14	Scouter 1			
15	Scouter 2			
16	Scouter 3			
17	Scouter 4			
18	Scouter 5			
19	Scouter 6			
20	Scouter 7			
21	Videographer/Scouter			

Secondary & Third Required Positions

# of Students	Secondary Position	Description & Notes
1	Back up Driver	Back up Driver is the operator
2	Back up Operator	Should ideally be a Scout from the Game Play Strategy Group - Can be a third position assigned
3	Back up Human Player	Should ideally be a Scout from the Game Play Strategy Group - Can be a third position assigned
4	Back up Coach	Strategy VP or Strategy Chief
5	Back up Technician	Can be a Software Pit Executive.
6	Back up Software Pit Executive	Ideally a software pit member. Perhaps technician.
7	Back up Hardware Pit Executive	One of the students already in the pit. Needs a deep knowledge of Mechanical, Control Systems, and Assembly of the robot
8	Awards/Tech Binder Presenter	Can be one of the Pit Executives
9	Game/Field/Pit Media - See Notes	One person assigned and responsible, but all Pit Crew members can manage. Should be delegated and NOT one of the PIt Executives.
10	Pit Control Systems	
11	Pit Software Data Analytics	If this is not Pit software Executive, then the right person needs to be present to download and analyze robot performance data.
12	PIt Software Auto Specialist	If this is not Pit software Executive, then the right person needs to be present in case tuning of Auto is necessary.
13	Pit Mechanical & Assembly	
14	Back Up Strategy Chief	Strategy VP

15	Back Up Scouting Lead	Ideally a scouter
16	Scouting App Lead	Fixes/upkeeps any issues with the scouting app

Appendix E: Decision Voting Council

972 Robot Decision Guidelines:

Decision Voting Council:

	Positions
1	Program Manager
2	Hardware Director
3	Operations Director
4	Shop Manager
5	Software Director
6	Control Systems Lead
7	Machining Lead
8	CAD Lead
9	Assembly Lead
10	Programming Lead
11	Programming Lead
12	Programming Lead
13	Programming Lead
14	Reserve Position (By students in CC)
15	Reserve Position (By Team Managers)

Summary

The team will have a ***Decision Voting Council (DVC)*** that has executive deciding power on all design and robot strategy decisions (not competition match strategy) for our competition robot. This council will be comprised of students in the curriculum council, all technical leads (12 students total), all students that have served 3 or more years on the team, and 2 potential reserve spots. One decided by students in the CC and one decided by the Team Managers.

This DVC is intended to be a democratic process that includes as many students on the team as possible, but still allocates the most important robot decisions to a select set of experienced, qualified students on the team that have the experience and wisdom to create the best choices. The DVC will

never be smaller than 1/4 of the total team size and never larger than ½ the team size; this will ensure that decisions never remain in the jurisdiction of the most experienced students. If the DVC is larger than 20 students, there will be no reserve spots added. If 19 students are on DVC, both reserve spots will be used.

As per our Domains of Jurisdiction, all *design* and *strategy* decisions are fully in the domain of students. That said, all DVC meetings can and/or will be held with technical mentors present if they are interested and able to attend. Students make the final decision, but as our Team Ethos states students will take all mentor information into consideration before making decisions.

Tiers of Decisions:

These decisions only apply to ***top level robot functionality (i.e. what the robot can do during a match)***. Any other design decisions will be dealt with by their respective sub-teams as long as they adhere to the overall design and strategy decisions set at the beginning of the season.

1. **Small decisions not required by DVC.**
    a. A technical mentor (acting as a neutral 3rd party) will decide if a decision is a "small decision" that does not require DVC approval.
    b. This includes improvisation during manufacturing or assembly that helps execute the ***original design and strategy***.
    c. For example, slightly changing the length or hole pattern of certain parts or using different spacers can be advised by lead members, and they do not need DVC approval.
2. **Significant decisions that require DVC approval**
    a. These are larger decisions that require a vote of the full DVC team and they will follow the meeting protocols shown below.

Meetings:

During build season meetings may often be very last minute and may occur with little anticipation. All students can and are encouraged to attend meetings, but decisions are only decided by DVC members. All decisions will be majority decisions with the members present at the moment. There is (currently) no quorum for attendance; meaning only the DVC members in attendance will vote on the decision. Nearly always, DVC meetings will be scheduled with a ***full day's anticipation*** by the Program Manager to all students on Slack. These meetings will be posted by 9 PM and ideally should happen after 5 pm to allow mentor attendance. In addition to the meeting announcement, as much information as possible regarding the decision in question will be posted on team discussion sites (Slack) to allow DVC members to formulate their opinion and position.

DVC meetings will be run by either captain, and Program Manager will, with the team's best intention, formulate a set of choices for the DVC to vote on. If these set of choices is not deemed as an accurate representation by the Team Manager or Lead Mentor, they will formulate the set of choices for the meeting. Program Manager will set a duration to the meeting time (15, 30 minutes, etc), and at the end of the discussion a vote will take place.

In critical but likely common occasions when time is very limited (such as the end of the build season), a lead mentor or Team Managers may decide that a DVC meeting may be held ***immediately*** with whomever members are present.

In summary, the only DVC meetings that are not passed through a designated lead technical mentor are meetings that are posted by 9pm for the next day starting after 5PM. All other design changes are passed through mentors as immediate DVC meetings or potential small decisions that do not require a DVC meeting.

DVC Voting

All voting for DVC decisions will be blind voting. No voting member, while voting, will know what or how other members are voting. Team Managers, if necessary, will proctor and count votes.

Appendix F: Competition Procedures & Rules

Competition Schedule

1. Day 0 or Day 1: Load in/Load out happens by Pit Crew and Pit Mentor or Transportation Mentor
2. Day 1: Practice Day
    a. Is attended by all Pit Crew, Drive Team, and part of the Strategy Team (limited scouters).
    b. Whole Competition Team Meeting is held at the beginning of the day.
    c. Goals/Actionable Items are stated by:
        i. Strategy Chief
        ii. Drive Coach
        iii. Pit Executives
        iv. Pit Mentor and Strategy Mentor
    d. Robot goes to pass robot inspection. Attended by pit mentor and pit executives.
    e. Robot goes to location where it is needed (See Competition Robot Management)
    f. Strategy Team pit scouts, and Drive Team practices.
3. Day 2: Qualification Matches Whole Competition Team Meeting is held at the beginning of the day.
    a. Goals/Actionable Items are stated by:
        i. Strategy Chief
        ii. Drive Coach
        iii. Pit Executives
        iv. Pit Mentor and Strategy Mentor
    b. Robot goes to location where it is needed (See Competition Robot Management)
    c. After every match, Competition Team (Pit and Drive & Strategy chief) debrief in the pit.
    d. End of day meeting:
        i. Debrief by Strategy Chief, Pit executives, Pit Mentor, and Strategy mentor
            1. Action item is made by pit crew for start of the next day.
            2. Picklist is created by the strategy team
4. Day 3: Finish Qualification matches & Playoff Matches

a. Meeting start of the day. Goals/Actionable Items are stated by:
    i. Strategy Chief
    ii. Drive Coach
    iii. Pit Executives
    iv. Pit Mentor and Strategy Mentor
b. Robot goes to location where it is needed (See Competition Robot Management)
c. Strategy team may preemptively meet with other teams to strategize or choose alliances (if possible)

Competition Match/Strategy Procedures

Before Match

- Strategy team (Strategy Chief, Strategy Mentor, Drive Coach, Strategy VP) meet amongst themselves to discuss match strategy *before* meeting with other teams. The Checklist is reviewed and covered. We assemble a proposed game plan for the whole alliance.
    - Time between matches is short Strategy team is planning two matches in advance. This is why we have a Strategy Chief and Strategy VP to do dual work in case it is needed.
- Strategy team meets with other alliance members. Strategy Mentor takes a back seat to student led discussion; only offers input if it has not been brought up by either student team.
    - Our strategy team is assertive; we don't hesitate to approach teams first. ***At minimum*** 30 minutes before a match starts; the goal is 45 minutes to an hour. We don't wait to be approached. If we need to approach an opposing alliance, we also do this immediately after our alliance match. We wait for all teams to get there to start meeting and our complete strategy team is there.
    - Our alliance game plan is ***already*** prepared. We propose our game plan, but we approach with empathy and understanding; the other team may not want to do what we're asking or may have other ideas. Here being a good listener will help our dynamic. Make them feel valuable and allow them to buy into our plan if our plan is the best. If their plan is the best, use theirs!
    - Proper graphics are shown to show our "story". Make the field board or digital screen large, visible, and it gets passed on to other drive coaches so they know what to do.
- ***Script out*** your autonomous routine with the other team.
- Strategy VP informs the whole team of the match strategy plan via Slack on the appropriate channel.
- Drive team prep: Drive team stays calm and focused. Find a spot to let them relax between matches. Drive team is not in the pit! They are not doing the thinking, they are doing the execution! We have a "thinking team" and an "execution team". Drive team is the execution team. No work between matches.

Pre-Match: Queue & Field

- We are the friendly team, and silence (even if just being shy) can be construed as not caring or standoffish. Be in the queue first. Drive coach acknowledges and verbally welcome the other alliance members. Help other teams queue. Some teams may be very inexperienced. Maybe they haven't driven at all yet. Compliment their robot, match, attire, spirit: prop them up. Build up the rapport with all teams. ***Confidence increases performance!***

- Drive Coach: Quick last minute huddle with the whole alliance. Briefly walk through the whole match. Strat board is visible if necessary. (Sentence frame: “We like to have a last minute huddle to go over the match. You guys ok with that?”). If they haven’t done this, our Drive Coach leads this. Ensure you remember what each team is doing!
- Each Drive team member is assigned a recurring field placement duty. Careful placement of robot and game pieces on the field is a must to ensure proper auto routines. Check location of game pieces. Swap game pieces if they appear not compliant (overly used, broken, etc).
    - Redundancy. Use two independent eyes to check each other's work (whoever places does not check their set up). Drive coach, you do final check.
- Ensure alliance partners line up. Check field, elements, other robots. Help alliance partners with connectivity if necessary.
- Strategy VP will update the team of strategy on Slack “Competition Updates”. Template is: “Match # Strategy Plan:” Skip a line and write out our plan. Include auto, tele, and endgame.
- Camera person in the stands is ready to go.
- Stand people: do your spirit thing on our team announcement! Get excited! This is fun!

During Match

- **Auto**
    - Drive coach: watch score.
    - Drive coach briefly remind the drive team what they are doing right before auto ends.
    - Strategy Chief and Pit Executives (in stands): Did autonomous work? Note any issues. Logistical or mechanical.
    - Drive team: Take a deep breath and fully exhale before you grab those controls. (Remember Karthik K’s assessment: one proxy for how good a team is is how fast they move forward and grab controls after Auto ends).
- **Teleop**
    - Remember: Drive Coach is doing advance planning, Driver/Operator you are solely focused on the task at hand. Drive Coach, if you do not have the next plan made by the time Driver/Operator is done with current task, you are not doing your job! Have that info ready if necessary.
        - Sometimes the Driver/Operator is just repeating similar cycles. Just affirm that’s what they’re doing. “keep doing that cycle”
    - Drive Coach: You are like a symphony conductor; you are one “Note” ahead of the drive team. Peripherally you are aware of the current task, but your primary focus is the next task or uncapitalized opportunity, and communicating that to the driver/operator.
    - Drive coach duties:
        - Inform them of sudden opportunities (a closer game piece, defense bot waiting for us, a specific scoring piece to multiply score, etc).
        - Focus on completing ranking points. What scoring needs to happen to gain the ranking points that do not depend on win?
        - Track score and ranking points. Be ready for a shift in strategy if something happens.

        - Are our alliance partners getting fouls? Check with them. Quickly message their drive coach, NOT their driver/operator.
        - Note how opponents are playing defense.
    - If our robot breaks, ***ensure no more damage is done.*** Calling off the current match to fix something small is better than continually breaking something and we're out of the tournament.
    - Ranking points are the goal during qualification matches. Hedge your probabilities between win/tie ranking point and scoring/endgame ranking points (that we should almost always get). Remember drive team does not know score nor ranking points. Their main focus is driving with absolute precision and that takes all their concentration.
        - Know when to stop scoring to focus on ranking points. *Example, stop scoring and do endgame. If you are already in the lead (3x), go to the endgame.*
        - Know when to "waive white flag", you're going to lose the match and not get match ranking point, quit and go to ranking point endgame.
        - Know the few situations when to keep scoring in endgame to ensure we have max points.
- **Endgame**
    - Need to talk to other teams! ***Need to be loud, assertive, but not aggressive!***
    - Before the match coordinate with other teams when endgame is happening. Have to watch the clock! Watch at 60, 40, 30 seconds.
    - Know the absolute final moment the robot must go to the endgame if we are expecting to fully complete the endgame. If that's the full 30 seconds, then it's the full 30 seconds. If it's more than 30 seconds, (needed to get endgame ranking point) then it's more than 30 seconds!
    - Be aware of what your partners are doing - talk to them! If necessary, and appropriate, remind them of the previously agreed game plan. (if they appear to be deviating)

After Match

- **Immediately After**
    - Take a nice slow breath, and fully exhale. Volleyball rule: give our drive team quick prop acknowledgement regardless of outcome.. Mentally give yourself a huge prop.
    - Win/lose - **Stay positive!** Do not gloat! Celebrate but always show respectful winning sportsmanship.
    - While at Alliance stations, quickly acknowledge your alliance team members. "Good job Team_____" (fist bump, shoulder pat, whatevs). Highlight any compliments to other teams. Find something! Specific praise is the best praise.
    - Apologize for any deviations. Own it.
    - Congratulate the opposition alliance team while unloading robots. Quick prop is all that is necessary.
    - Carefully remove robot, cart, drive station off field.
    - Strategy Chief and Strategy VP: You will be monitoring score and RP's for any mistakes. Is the score/RP/match outcome correct? Quickly inform Drive coach with any discrepancy and they will approach the Lead Referee with a silent Strategy Mentor to clarify/dispute anything. This is time sensitive and needs to happen right after the match.

- Make your way immediately to the pit. Avoid rushed conversations on your walk there. Walk quickly to the pit without discussing stuff. Without everyone there, decisions will not be understood by the rest of the team. Whatever you say is repeated in the full comp team meeting anyway.
- Strategy VP grabs video card from person in the stands.

- **Pit Debrief**
  - There will be an official debrief in the pit ***after every match*** with all relevant personnel: Pit Executives, Strategy Chief, Drive Team, Pit Crew, Pit Mentor, and Strategy Mentor (don't be late!). These people must be present for this meeting. This meeting will be complete but will be short, to the point, with quick decisions made. Clear pit of other non-necessary personnel. Use your public voice, and *no side conversations.* **<u>If you're talking you're talking to everyone.</u>**
  - No strategy talk. Only hardware/software talk.
  - First question is directed to the Drive Team. Any problems? Driver/operator *may not debug*, only state what happened and state the facts! Do not solve for the pit crew. This may provide incorrect assumptions.. Don't do their job.
  - After this debrief the two Pit Executives and Strategy Chief will quickly outline a course of action to the whole team. There are roughly 4 options (not all encompassing. Maybe more):
    - Robot needs work and needs to stay in the pit and/or hardware/software testing at the practice field. (Driver/Operator usually needed)
    - Driver needs practice and will go to the practice field.
    - Robot needs work but driver practice is more important, or work is too lengthy to complete.
    - Nothing needs to happen, and the pit/drive team can rest! (This is ok!)
  - Pit Safety person will update all 972 team members via a descriptive Slack message after every match. This will be detailed and respect the fact that the rest of the team wants to be involved in what is happening. All updates will be posted on "Competition Updates" channel in Slack. One will be from Strategy VP and other from Pit Safety.
    - If Strategy deviated, Strat VP will post that on "competition updates".
    - Pit crew will post: "Robot Update Match #". Post even if nothing to add. Just post "No updates". People need to know even if nothing went wrong with the robot as it may appear that something went wrong. Remember, people in the stands are most of the time in the dark as to what happened in a match if anything went wrong, and that is not fair to them.

- **Drive/Strategy Team Debrief**
  - In attendance: Drive Team, Strategy Chief, Scouting Lead (?), Strategy Mentor.
  - Strat VP: Load video on big screen laptop. You need to save video to a folder afterwards with Comp and Match Number. E.g. "SVR 2024 - Qual/Playoff Match 24".

- Go to your predetermined quiet space and watch the video(s). Call things out and ask questions. Driver/Operator/Drive Coach is coachable. This could be a student, but a mentor monitors it.
- If there is less than 5 matches between the current and next match, skip video, do a verbal debrief, and at that moment discuss “Before Match” procedures.
- Review any errors in any aforementioned steps from “Before Match”, “Pre-Match”, “During Match”, etc. Most of this conversation comes from students. Mentors, let this happen but if something is missed bring it up.
- Drive team breaks! You are on call for the practice field if mechanical personnel need your assistance. Do not hang out by the pits.

Playoffs

- Send drive team to lunch early. Stay loose and relaxed.
- Pit crew, drive team gets fed first (lunch).
- Highly knowledgeable pit crew member visits all alliance member pits and asks them about robot. See if they need help. Ask if all their mechanisms are performing as expected. If not, our strategy team needs to know. Our scouters should inform pit executives if alliance robots are maybe not performing well.
- Agree on a meeting spot and time with the alliance teams. ~45 minutes before matches. Pit executives attend in case they have robot complications to express.
- Strategy Chief writes up playoff strategy for alliance and comes prepared with their best game plan. Strategy board is ready to go.
- Start with introductions of alliance, during huddle. Make it quick. Name and role. If we are first alliance captain, start by quickly mentioning everyone's strength and positive attributes (“Team 1234, you’re shooter is great…”). We have short window to build confidence and trust with 2 stranger teams. Confidence can make up a decent amount of performance.
- 3rd pick may often be playing a specific role. Sometimes defense. Work with the 2nd alliance (3rd alliance member) pick if necessary. They may often not be as strong as top 2 bots. Video review with advising 3rd robot. Shift resources to coach 2nd alliance pick.
- Oftentimes during playoffs time between matches is short. Pit debrief will still always be held. Strat team should meet with the alliance, even if briefly, to discuss the next match.

Competition Robot Management

- The Pit Executives and Drive Coach (and incidentally the Pit Mentor and Strategy Mentor) will be the point of contact to discuss robot usage between the two groups. Each group will make their needs met to the respective Pit Executives or Drive Coach.
    - For example, robot may not be fully operational, but it may take too long to fix and the Drive Coach and Pit Executives may decide that robot should go to the practice field.
- Regardless of robot state, the robot is passed off to the Drive Team when it is necessary to queue up.
- At the beginning of the day, the robot starts with the pit. The pit personnel ensure the robot is fully sound.
- Whenever the robot is sound, the Pit Executives will inform the Strategy/Drive Team robot is ready to go.
- Practice Field Decisions

- If the robot needs to go to the practice field to test hardware or software capabilities, the Pit Executives will make this call.
- If the robot needs to go to the practice field to allow driver/strategy practice, the strategy chie will make this call.
- In both situations, Driver and Operator need to be present.

Pit Rules

1. The PIT MENTOR(S) are ultimately in charge of all operations, safety, and materials in the pit.
2. PIT CULTURE:
    a. There is a lot of action in the pit. Regardless, ***the pit will be a calm, respectful, controlled environment.*** Regardless of any situation urgency that may be happening, there is no chaos in the pit.
        i. People in the pit WILL clearly communicate their intentions and speak clearly to all members involved.
        ii. People in the pit will speak in respectful nice tones.
        iii. Good intentions will be assumed by all.
        iv. Be kind, smile, help others. This is supposed to be fun.
3. The two PIT EXECUTIVES are in charge of all robot operations. All questions regarding who, what, when, how with the robot is decided by the two PIT EXECUTIVES.
4. PIT SAFETY will guide all cleaning and ensure the pit is safe.
    a. ***All*** pit crew will ***immediately*** put away and clean their tools when done.
5. 6 STUDENTS MAX in the pit at one time. The people in the pit are clearly marked on the schedule that is premade.
    a. If Pit Executives invite someone in to do work they must send someone out. The numbers in the pit will stay constant.
    b. Students are not hanging out outside the pit. We want to look professional. Having a lot of members hanging around makes us look disorganized and chaotic.
6. 2 PIT MENTORS MAX assigned to mentor pit duty. Ideally 1.
7. The area outside the pit is, ***briefly,*** open for visiting by students, parents, and mentors. No more than 3 minutes.
    a. People outside the pit are not dialoguing with people inside the pit unless they are:
        i. Strategy Chief, Drive Team, Scouting Lead, Strategy mentor or on some other list of dedicated students that need to discuss with pit personnel.
8. There will be one pit crew member inside the pit at all times. This will be the pit safety person or someone the Pit Safety person has assigned.
9. Only bags allowed in the pit area for the people working in the pit and strategy/drive team. Scouters will leave bags with them.
10. Water in the pit is for PIT PERSONNEL only and all water bottles will be labeled with students/mentors names with sharpies.
11. Drive Team should not be in the pit unless requested by pit personnel. DRIVE TEAM will be accessible nearly immediately.
12. Saucy computer clause: No food will EVER be allowed in the pit. NO EXCEPTIONS!

Appendix G: Student Leadership Selection Process

There are two separate group of students that administer the team during the year:

- During all non-competition events, the team is ran by the Leadership Council. The leadership council is shown in our 972 Organizational Chart.
- At any competitive events, the team is managed and ran by our Competition Council. The Competition Org Chart is shown here.

Leadership & Competition Council Selection Process

Team Managers will select the leaders for the Leadership Council and Competition Council. This is done with thoughtful consideration of the recommendations that mentors and students provide. Student candidates will lobby for themselves through interviews and class presentations. There will be one or more competition council positions that are selected by try outs instead of selection. This would be the driver and, depending on the game, potentially the human player.

During this whole process, students, mentors, and team managers should be using the leadership descriptions in the handbook to determine who is the best fit for the position.

Leadership Council Selection Process

1. As of 2024, leadership selection process will happen soon after the start of school in August. In future years, this may change and leadership selection may happen the year before and after competition season (April/May).
2. Positions will be presented to the team, and team members will confidentially announce their candidacy to the team managers. It is highly recommended, for the privacy of the candidate, that they do not share their candidacy to the team until they are approved.
3. The team managers will notify any students that are obviously not suited or qualified (for example, to be hyperbolic, say a first year applies for Captain) and have no chance of getting this position. This will save the student and team manager time as they will not need to proceed through the following steps. Afterwards, the approved list will be made public to the rest of the team (mentors and students).
4. Each approved candidate will do a short presentation to the whole team (students, mentors, and team managers) on why they are suited for the position. Talking points are still to be determined. Candidates should certainly use the leadership descriptions to formulate their answers, or else their consideration to the position by Team Managers may be negatively affected.
5. Based on this presentation, all students on the team will confidentially submit to the team managers their approval and reservations to one or more candidates. As mentioned above, students are using the descriptions on the handbook to base their opinion. On this form, students will include their reason why. It is very useful for the team managers to know who the team thinks would work well in that position, and who would not work well in that position.

Team managers will positively ensure that this information is confidential, and only known by the student and the team managers.

6. Each applicant will sit through an interview with the team managers. Length and questions are to be determined.
7. Team managers will consult with the technical mentors (mentors that have had significant time working with students) on their recommendations and reservations.
8. Using all of the information provided by mentors and students, and the descriptions of each position in the handbook, the team managers will come to a decision and announce the selected students to the rest of the team.

Leadership Selection Schedule

The following schedule will take place for the steps above. Days will be consecutive meeting days of robotics.

- Class day 1: Step 2 above
- By Class day 2: Step 3 above.
- Class day 2: Step 4 above
- Before class day 3: Step 5 above
- By class day 5: Step 6, 7, & 8

Competition Council Selection Process

The competition council will be decided on staggered dates.

- Most of the strategy team will be decided in late summer/early fall so they can start preparing our strategy for the following year. Specific strategy leads (Strategy Chief, Strategy VP, Drive Coach) may be appointed later to find the most suitable person amongst the strategy team. Depending on the work accomplished by the strategy team, the specific Strategy positions could be decided as early as late fall, or as late as mid build season.
- The driver/operator should be appointed late fall season/early winter so they can start practicing driving skill.
- Hardware and software pit executives can be, and should be, decided as late as the end of build season in order for the Team Managers to have a clear picture of who are the best students with the highest knowledge of the robot hardware and software. In addition, other pit members, that best suit the description of the roles (pit control systems, assembly), will be appointed at that time.

With all these positions, student and mentor feedback will be asked for and considered in all positions. The method of this is to be determined. Perhaps a confidential poll as described in the leadership council selection, a public discussion with the leadership council, or some other, as of yet to be decided process.

Appendix H: FAQ Regarding Iron Claw Team

Please click here to see our Frequently Asked Questions.

Appendix I: Drive Team Contract

Driver Excerpt

Driver will be decided by tryouts. During the preseason, the Leadership Council will determine an equitable driving test for tryouts. Every student that wants to tryout must get a chance. The team will offer at least one practice session for all students before the driving test. The student with the best objective results will be nominated as the driver. The student with the second best objective result will become the back-up driver. Before the driver and back up driver is accepted in this position they must review the requirements below.

Driver Tryout Process

The Driver Tryout Process is described in detail in this document.

Requirements

Being on the drive team is a privilege. The Leadership Council and the Team Managers have the ability to take this away if we see fit.

By accepting a drive team position, this student:

- Is well-versed in game rules and strategy (Superior score in rules test).
- Mandatory attendance to ALL competitions and scrimmages. This includes all regionals and World Championship in Houston if we qualify.
- Commit to extensive practice time at the end of Build Season (Consider ~ 6-8 hours of just driving time at the end of Build Season)
- Pro-actively coordinates with other teams if they have mock up practice fields we can use. (if necessary)
- Works well with all other members of the Drive Team
- Understands that driving strategy is a team decision mostly split between the coach, strategy lead, operator, human player, and likely other team members to include the Program Manager.

By signing the line below, I commit to attending all Competitions the team is attending, the World Championship (if we qualify), and spending many hours learning and practicing driving the robot especially near the end of Build Season. ***I attest that I have cleared my schedule of any conflicts that can impede me participating as a drive team member on this team.***

Signature: _____

Date: _____

Appendix J: Outside of Class Activities

If the CC lead team desires to have an outside of class activity where they are representing the team (fundraising, networking, outreach), they must submit an Outside of Class Request Form (linked here). Please make a copy of the form and save it in this folder (click here).

If it is an outreach event that is not fundraising, it needs to be submitted to a CC meeting ***at least*** 2 weeks prior to the event. If it is a fundraising event (that will require ASB approval) it needs to be submitted to a CC meeting ***at least*** one month prior to the event. ***Plan accordingly otherwise the excursion will not be accepted.***

Link this form on the CC agenda so the Team Managers can review it. All boxes in yellow must be filled out. See example of the form below.

Appendix K: Design/Prototyping Process

See link here.

Outside of Class Request Form

Instructions

You have view only privileges. Please make a copy and save it in this folder.
You need to fill out all areas that are in yellow.
Please submit this to a cc meeting ***at least*** 2 weeks before the scheduled event.
If this is a Fundraising event, it needs to be submitted ***at least*** one month before the event at a CC meeting.
Link this form to a CC meeting agenda.
Please plan this accordingly otherwise this may (likely) get rejected!

Title of Event
Date Happening. List times as well.
Where? Location
Lead Student(s)
Reason. Why are we doing this?
Is a mentor required? If so, do you have a mentor in mind?
Is this a fundraising event? If so ASB approval will be needed.