

Kerrville Robotics Alliance

Robotics Team Handbook

Expectations of Students, Parents, and Mentors Joining a KRA Team

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Table of Contents

Acknowledgements.....	1
List of Revisions	1
1.0 Introduction	5
2.0 Mission & Goals	5
3.0 Team Organization.....	6
3.1 Coaches.....	6
3.2 Mentors.....	6
3.3 Managers.....	6
3.4 Project Leads	7
3.5 Associates	7
4.0 Students	7
4.1 Student Requirements.....	7
4.1.1 Dues.....	7
4.2 Rules & Expectations	7
4.2.1 Respect	7
4.2.2 Academics	8
4.2.3 Dating.....	8
4.2.4 Integrity	8
4.2.5 Team Priorities.....	9
4.2.6 Substance Abuse.....	9
4.2.7 Team Communication.....	9
4.2.8 Safety	9
4.2.9 Travel & Competitions.....	10
4.2.10 Workspaces	11
4.3 Meetings.....	12
4.4 Business Team Roles.....	12
4.4.1 Business Manager	12
4.4.2 Marketing Specialist	13
4.4.3 Media & Networking Coordinator	13
4.4.4 Business Notebook Coordinator	13

- 4.4.5 Outreach Director 13
- 4.5 Engineering Team Roles 13
 - 4.5.1 Engineering Manager 13
 - 4.5.2 Engineering Notebook Coordinator 14
 - 4.5.3 Design Team..... 14
 - 4.5.4 Game Analyst 14
 - 4.5.5 Build Team 14
 - 4.5.6 Programmer 14
- 4.6 Competition Specific Roles 14
 - 4.6.1 Robot Driver & Operator & Captain 15
 - 4.6.2 Scouts & Delegates 15
 - 4.6.3 Pit Crew 15
 - 4.6.4 Pit Hospitality Crew 16
- 4.7 Student Role Selection 16
 - 4.7.1 Leader Requirements..... 16
 - 4.7.2 Manager Selection..... 17
 - 4.7.3 Project Leader Selection 17
- 4.8 Dress Code 18
 - 4.8.1 Team Apparel 18
 - 4.8.2 Competition Dress Code 18
 - 4.8.3 Conference or Field Trip Dress Code 18
- 4.9 Online Access & Use Policy 19
 - 4.9.1 Central Team Files 19
 - 4.9.2 Software 19
 - 4.9.3 Programming Resources..... 21
 - 4.9.4 Part Catalogs 22
 - 4.9.5 Social Media 22
- 5.0 Parents 23
 - 5.1 Expectations 23
 - 5.2 Parent Team Support 23
 - 5.3 Parents at Competitions 24

5.4	Supporting Your Student	24
5.5	When Parents Get Notified.....	25
6.0	Mentors	25
6.1	Requirements.....	25
6.2	Expectations	25
7.0	Resources.....	26
	Appendix A – Handbook Acknowledgment Form	27
	Appendix B – Team Role Assignment Worksheet.....	29
	Appendix C – Team Application Form	31

1.0 Introduction

The purpose of this handbook is to detail the rules, expectations and policies for Robotics teams participating in the Kerrville Robotics Alliance. For clarification, questions or concerns please ask a team coach/instructor or mentors.

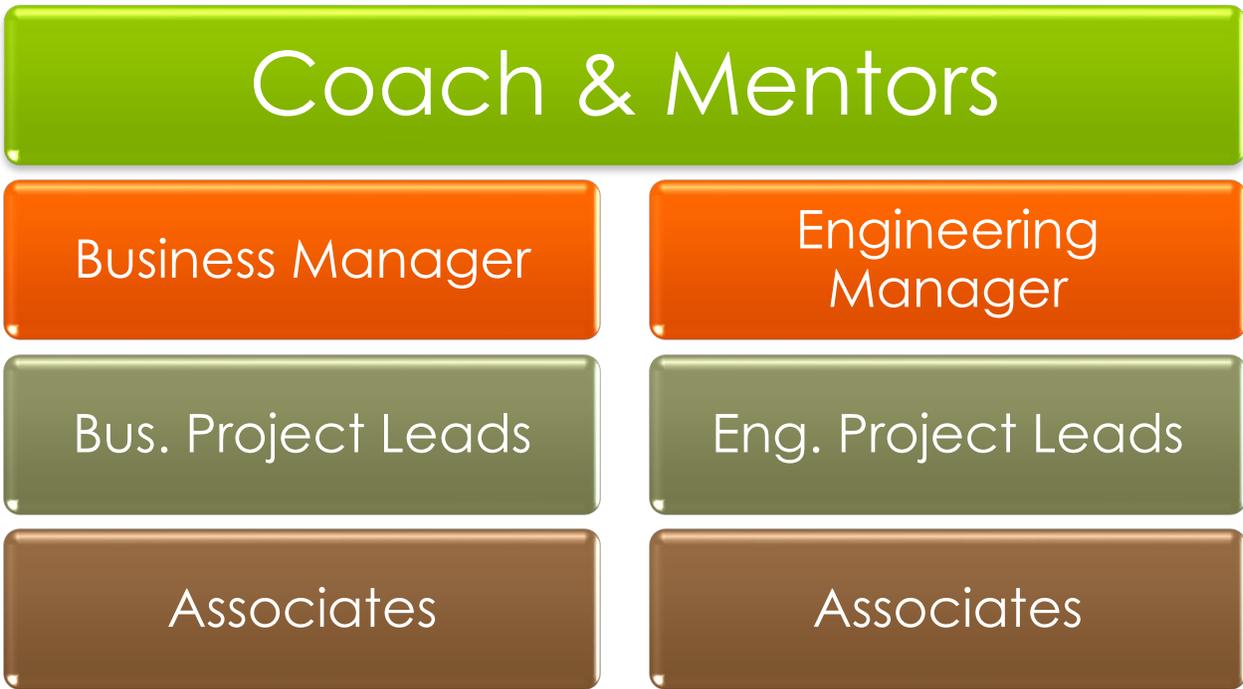
2.0 Mission & Goals

The mission and goals of the Kerrville Robotics Alliance are as follows:

- To grow an appreciation for STEM (Science, Technology, Engineering, and Math) in the students and community.
- Support and inspire other robotics organizations that aim to excite people about STEM education and help create sustainable, long lasting programs.
- Create and grow awareness with local, state, and national policy makers to help support STEM education in schools.
- To apprentice students in an environment that promotes adult work skills and exploration of talents and interests.
- Foster and grow intangible skills such as teamwork, project/time management, and strategic thinking that are useful beyond high school.
- To compete in an excellent way that builds positive character while striving to succeed in tournament advancement for the opportunity it provides for learning and growth.

3.0 Team Organization

The team is structured as follows:



3.1 Coaches

The team's Coach/Instructor is ultimately responsible for the team. There will be times when the student leadership and the mentors will not agree. When this happens, the Coach/Instructor will make final decisions.

3.2 Mentors

The team's mentors volunteer their skill and knowledge for guiding and assisting the team in their endeavors.

3.3 Managers

The managers are responsible for a department on the team. There are two departments on the team: Business and Engineering. The Business Department is responsible for all non-engineering projects such as fundraising, graphic design, social media, outreach, and operations. The Engineering Department is responsible for all engineering related projects such as robot design & construction, providing engineering content for the notebook, and the robot's competition performance. Being a manager is the highest position a student can have on the team. They're responsible for overseeing all tasks and projects assigned to their department.

3.4 Project Leads

The Project Leads are students who are responsible for the planning and execution of projects. Their job is to work with their manager, the team's mentors & other project leads to execute projects and tasks assigned to their department. Each Lead's job is different in respect to workload and time of the year. For example, the Lead of Scouting & Strategy's job is most demanding during the competition season. Therefore, during the fall they might not be as busy as the Lead of Fundraising who is working on finishing grants and running fundraisers. No one Lead position is more important than the others. Each position is equally important to the overall success of the team. Students can request to oversee a specific project by notifying the team's mentors and managers.

3.5 Associates

Associates are students who are not assigned to a leadership role but are integral to the success of the team. They are expected to work alongside project leads and managers to help the team achieve success.

4.0 Students

Being on a robotics team is a privilege, not a right. Students are expected to attain to high standards of work ethic and behavior. This section outlines the expectations.

4.1 Student Requirements

Any student may participate regardless of race, gender, religious affiliation, or economic status. Students must be in middle school or high school and adhere to the age limits set by FIRST. Students need to be available for team practice times. Prior experience with robotics and programming is not required.

4.1.1 Dues

Team dues as set by KRA must be paid once a student has been accepted to a team. If there is difficulty paying the dues a scholarship may be requested. Scholarship awards will be determined by the KRA board.

4.2 Rules & Expectations

The following are the rules and expectations each student must follow to be a member of the team.

4.2.1 Respect

Students are to respect each other as well as the team's mentors, parents, and sponsors always. Students who are routinely disrespectful will be asked to leave the team.

Disrespectful actions include:

- Refusing to obey clear, mandatory instructions

- Physical bullying or verbally abusing others with insults and innuendo
- Persistent foul language

4.2.2 Academics

Academics are the top priority for student team members. Do not use robotics as an excuse for not turning in an assignment or turning in an assignment late. If you need to miss a meeting or event to do schoolwork, please let a student leader or mentors know as early as possible.

Students who are traveling or competing with the team should notify their KISD teachers, home school teachers, and/or instructors early in the semester so that they can try to avoid scheduling important dates (exhibitions, field trips, project due dates, etc.) at the same time as a competition.

If a student is absent from school (other than normally excused school absences, such as eye, dental or other such appointments), they should not come to an after-school robotics meeting.

4.2.3 Dating

It is highly recommended that students on the team do not date other team members. Students who are dating become a distraction not only for themselves, but other students on the team. In addition, dating within the team creates awkward situations during the relationship and when the relationship ends.

Students who choose to date should notify the FTC Coach and team's mentors early on. It's better to be open and upfront than to try to sneak around and hide it.

Students who choose to date are expected to 'leave the relationship at the door'. This means that while they're at robotics, the dating students should conduct themselves as normal students on the team (i.e., no public displays of affection, no holding hands, no sitting on each other's laps, showing preference, sneaking off to be alone, etc.)

Couples who choose to date will not be put in positions where they will have to work closely together (ex: drive team and/or pit crew). This is to protect the best interests of the team and prevent awkward or uncomfortable situations for other students on the team.

4.2.4 Integrity

Integrity means being honest with each other as well as the team's mentors and not trying to cover up mistakes or errors in judgement. KRA understands that students, like all people, make mistakes. And that's okay. However, students should own up to those mistakes. Being forthcoming and honest is always best.

Stealing from each other or the team is not tolerated and will result in immediate expulsion from the team.

Integrity must always be practiced at competitions. This means that team members will not try to deceive judges or other teams. KRA teams will not lie about the condition of the robot or throw matches in an effort to gain a more favorable alliance. Team members will also refrain from discussing (even jokingly) such strategies on social media outlets, in person, or on any other communication platform. Failure to do so will result in an investigation by the coaches and may result in suspension from the team.

4.2.5 Team Priorities

Students are expected to put what's best for the team ahead of their own ambitions. Students should always be asking themselves "What Can I Do to Help the Team Succeed?" In the end, people rarely remember individual performances. What people always remember is what the team accomplishes. Ultimately what the team accomplishes together will look far better on a college application or resume than what you personally accomplished on the team.

4.2.6 Substance Abuse

Alcohol, Tobacco, Vaping Devices, and Illegal Drug use are not allowed on the team. It is important that KRA maintains a safe environment for everyone on the team. Using or being under the influence of drugs or alcohol at robotics puts not only yourself but other people in danger. Any student who is caught using or being under the influence at a team event will be expelled from the team immediately. If the incident happens while traveling, the student will be sent home at the parents' expense.

4.2.7 Team Communication

- **Email** is used for most team communication. Students are expected to have an email account that they check regularly. They should make a point to check their email at least once a day throughout the year, since the team does continue having events during the summer.
- **GroupMe** is a private group text messaging application that is effective for team communication. It can be used on any device. All Group messages are required to have instructors and mentors included.

4.2.8 Safety

- **While at robotics, your safety and the safety of those around you should be the top priority.** Most injuries at robotics come from not knowing how to use or misusing a tool. Anytime you are not sure how to do something, you should ask someone who does (veteran student, mentors, etc.).
- **Students must wear safety glasses at all times when working on or near an FTC Robot or using machine tools.** Safety glasses are available and should always be worn. Each rookie student will be given one (1) pair of safety glasses at the beginning of the school year. It is the student's responsibility to bring their safety glasses whenever they are at robotics. Loaner pairs are not available; however, students can borrow a pair from another student and/or purchase another pair

of safety glasses. It is not uncommon for students to purchase a few pairs of safety glasses to keep in different places (car, bags, etc.). Students who do not have their safety glasses will not be allowed in a room where an FTC robot is being worked on or where machine tools are being used.

- **Students should report any injuries that happen at robotics to a team mentor ASAP.** Depending on the severity of the injury, it may need to be reported to the school and/or parents for insurance purposes. Please do not try to hide or cover up an injury that happened at robotics.
- **Power tools should only be used with the permission of a team mentor.** The team's mentors are the ones responsible for your safety while at robotics. No power tools will be used by team members without a mentor or coach present. The mentor or coach may not be comfortable with you using a specific tool, or with how you wish to use the tool. No student should use a power tool without first being trained on how to safely use it. This includes any power tools you may have used outside of robotics.
- **Students are not allowed to drive themselves and/or other students to/from team events unless granted special permission by team coach.** Students who fail to comply with this rule will first receive a warning. Repeated violations may result in suspensions from the team, eventually leading to removal from the team.
- **If a student is sick, they should stay home from robotics.** This is especially true during build season when the team works in close quarters. Students who come to robotics sick can easily get other students and mentors sick. Please be respectful of others and stay home. Any student who comes to robotics and is sick will be sent home.

4.2.9 Travel & Competitions

Traveling and competing with the team is the apex of the season and is the culmination of everyone's hard work and dedication. In order to get the most out of being on a robotics team, each student should make it a point to attend one or more competitions each season.

- **Students who have met all of the participation requirements will be given the option of traveling with the team to competition.** Traveling with the team is not a requirement to be a student on the team and is a privilege. The team's mentors reserve the right to refuse any student from traveling if they regularly violate team rules and expectations.
- **While at competition students are expected to be professional, work hard, and exhibit the core values of FIRST.** The team prides itself on its professional appearance and demeanor during competition. In addition, the team also wants to compete in a way that inspires others. This means working hard to overcome problems, helping other teams do their best, sharing with enthusiasm, and displaying the highest integrity both on and off the game field.

- **While traveling there will be additional rules for students to follow. Students who do not follow these rules may be sent home at the discretion of the FTC Coach/Instructor and/or not be allowed to travel in the future.** Students travel as a group with the team. The team takes care of all hotel reservations, transportation, etc. Students who are traveling with the team will not make individual arrangements. Rooms and room assignments will be made by instructor/coach prior to the team leaving for competition. Rooms will consist of 3-6 students per room (depending on the number of students, size of the hotel rooms, etc.). Under no circumstances will any male or female students be in the same hotel room. Students who have concerns about sharing a room with a specific person should notify the FTC Coach/Instructor early and privately.
- **The FTC Coach/Instructor and team's mentors will keep a headcount** to make sure that no one was left behind while we are in transit. If someone is missing the student(s) should report it to the FTC Coach/Instructor and team's mentors right away.
- **Students should never be alone in any part of the hotel with someone of the opposite gender.** This is not only to prevent inappropriate behavior but also to protect the students from possible accusations of inappropriate behavior.
- **No one from outside of the team can be in a student's room** at any time unless it's hotel staff or with the FTC Coach/Instructor and/or team's mentors.
- **Students are not allowed to leave the hotel without the FTC Coach/Instructor's permission.** If students receive permission to leave the hotel, they must be in a group of 3+ or with mentor supervision.
- **Students who are taking medication** must tell the FTC Coach/Instructor and/or team's mentors. All prescribed medication will be collected by the FTC Coach/Instructor. This is to prevent students from abusing medication as well as make sure people in their rooms aren't allergic to the medication.
- **Students who have food/medication allergies** must tell the FTC Coach/Instructor and team's mentors prior to traveling.
- **Students are not allowed to bolt doors unless after bed check.**

4.2.10 Workspaces

Kerrville Robotics Alliance is fortunate enough to be allowed to use space at the Goodyear and Apel residences and KISD schools to practice and prepare for competitions. The areas we use each have a work area, a full practice field, and a small workshop we use for meeting.

- **Every night when we leave, the workshop must be clean.** We want to show our hosts that we appreciate the space they're letting us use, and we never want to leave the areas messy. The following areas need to be cleaned at the end of each practice:
 - The Work Area

- The Playing Field
- The Small Machine Shop
- **Food & drink are allowed, as long as students pick up after themselves.** Each year students start the year being able to have food and drink inside the robotics center (never on the practice field, the small machine shop, in the pit or near a robot). Students will lose this privilege if they do not clean up after themselves. Cleaning up includes picking up after themselves at team meetings, build season meetings, and team events. If the mentors feel that students have not been doing a good job picking up after themselves, all students will lose the privilege of eating and drinking inside the workshop.
- **Food & drink must be kept away from laptops and electronics.** Circuit boards are easily short circuited by liquids or the subsequent corrosion and adhesion of dirt to areas where acidic sodas have been spilled. Acids from foods and sodas will also corrode and destroy other materials as well. We are grateful for all the equipment we use and can show this by acting responsibly with food & drink.
- **Students are not allowed to be inside the classrooms and/or shop areas without a mentor.** Most days at least one mentor will be at the workshop before the start of practice. If a mentor is not present, students are not allowed to stay in the area.

4.3 Meetings

Meeting times are set by the individual teams and sub teams as required. A mix of whole team and sub team meetings is recommended. Whole team meetings focus on coordination, education, and presentation practice. Sub team meetings are arranged to focus on specific project goals.

4.4 Business Team Roles

The business team is tasked with organizing and running the marketing, outreach, and business functions of the team. Successfully engaging the community can help the team win the **Connect Award**. The business team also takes the lead in producing a compelling video public service announcement (PSA) for the season to help win the **Promote Award** (each season has a new PSA subject). As ambassadors of FIRST the business team may help win the **Motivate Award** by inspiring others in the community to embrace the culture of FIRST.

4.4.1 Business Manager

The Business Manager will be in charge of coordination and time management of the business team. The Manager is expected to lead the business team, make final decisions, keep track of schedule, and keep track of budget. Leading the team includes assigning projects to team members, making sure they have the resources needed, and following up to make sure that work is getting completed on time.

4.4.2 Marketing Specialist

The Marketing Specialist is in charge of defining the team branding design and coordinating the projected image of the team across all media forms. The team branding appears on clothing, swag, business cards, report covers, and in the design of a tradeshow booth displayed at competitions. The Marketing specialist will oversee both the creation and production of marketing items.

4.4.3 Media & Networking Coordinator

The Media & Networking Coordinator is responsible for the production of the team web presence, social media posts, and press releases. These communication forms are important for reaching the community, sponsors, and other teams. Messaging includes promotion of STEM in the community, promotion of the team, and direct communication with other teams.

4.4.4 Business Notebook Coordinator

Every year a team will produce a notebook with two major sections one of which covers the business aspects of the team. The Business Notebook Coordinator will manage the assembly and formatting of the business notebook. Contributions to the notebook will come from all business team members.

4.4.5 Outreach Director

The outreach director organizes and schedules outreach activities. Outreach activities may include such things as school visits, presenting to companies, day camps, council meetings, parades, student ambassadors, or any other type of public interaction that helps promote STEM learning through robotics at the local, national, and/or world level.

4.5 Engineering Team Roles

The engineering team is tasked with organizing and running the design, analysis, programming, and construction of the robot. The engineering team is essential to win some judged awards. A well-documented design process that also describes the underlying math and science can help the team win the **Think Award**. A particularly inventive and robust design element can help the team win the **Rockwell Collins Innovate Award**. A particularly stylish or decorative design element that doesn't detract from robot performance can help the team win the **Design Award**. The Control Award is given for well-documented programming that shows creativity, good design, and works consistently.

4.5.1 Engineering Manager

The Engineering Manager will be in charge of coordination and time management for the engineering team. The Manager is expected to lead the engineering team, make final decisions, keep track of schedule, and keep track of budget. Leading the team includes assigning projects to team members, making sure they have the resources needed, and following up to make sure that work is getting completed on time.

4.5.2 Engineering Notebook Coordinator

Every year a team will produce a notebook with two major sections, one of which covers the engineering aspects of the team. The Engineering Notebook Coordinator will manage the assembly and formatting of the engineering notebook. Contributions to the notebook will come from all engineering team members.

4.5.3 Design Team

Design team members will execute the overall design strategy based on team inputs. Design team members may use sketching, calculations, mock-up prototyping, simulation, and CAD modelling to help arrive at a robot design capable of meeting the team goals. Designing can also include research and development efforts done on the side to help prove or develop a new idea. Designers are expected to be resourceful when it comes to locating solutions and parts. Designers will make efforts to integrate new skills and techniques into the robot design as the team learns.

4.5.4 Game Analyst

The Game Analyst will spend time analyzing the game rules and robot design elements to predict the effects of design decisions on game scoring outcome. They will track robot performance objectively to help the team make design improvements. They will work closely with scouts to assess the performance of alliance partners and opposing alliances.

4.5.5 Build Team

Build Team members spend hours of time fabricating and assembling the robot. They work on improving their shop skills and knowledge of robot assembly including fasteners, wiring, material, and many machine parts. A Build Team member needs to be patient and flexible working with partially complete designs and sometimes having to disassemble in order to make corrections and improvements. This is a job for students that like to work with their hands.

4.5.6 Programmer

The Programmers will be responsible for writing and maintain the code that controls the robot for the autonomous and driver-controlled game periods. Programmers will learn to work in the Android Integrated Developer Environment writing JAVA code that is downloaded to the robot controller. Programmers are tasked with creating and finding solutions to problems with the control and interaction of the robot with the playing field and humans.

4.6 Competition Specific Roles

These roles need to be practiced in preparation for competition and then become very active during competition. Robot game play during a tournament competition is focused on trying to attain a **Finalist Alliance Award** or a **Winning Alliance Award** for the goal of advancement.

4.6.1 Robot Driver, Operator, & Captain

This is the group of students who drive/compete with the robot during matches. The Driver is in control of the robot position on the field. The Operator is in control of the robot functions (e.g. arm or shooter). The Captain is in charge of the drive team and watches over the playing field while communicating important information to the drivers while they are driving. The Captain has the main responsibility for making strategic decisions as the match unfolds. The Drive Team also has responsibility for scheduling practice with other teams on the practice field to work out strategy and insure compatibility of autonomous routes with alliance partners. Being on the drive team is a very demanding position at any given competition and requires the ability to remain calm under stressful circumstances.

All students will be permitted to drive in practice and potentially in league meet matches. The team will decide who has practiced enough to fill a particular role at a particular competition level. Students should put in extra driving practice outside of regular meetings if they want to be considered for the drive team.

4.6.2 Scouts & Delegates

This is the group of students who are responsible for collecting information about other teams and developing a strategy for match play and alliance selection. During matches, the scouts collect data on every robot in every match. This data is compiled and is used to help form match strategies as well as direct the team on what to do during the alliance selection process. Requirements for scouts:

- Practice scouting and work with Game Analyst to identify metrics to use when scouting
- Pre-scout teams prior to a competition including review of online stats, videos, social media, and web presence
- Attend nightly scouting meeting while at competitions
- Sit in stands to help with the collection of match data
- Delegates are scouts sent out to other teams to collect data or negotiate alliance selection. Delegates need to be comfortable interacting with strangers in a friendly and gracious manner.

4.6.3 Pit Crew

This is the group of students who are responsible for maintaining the robot at competition as well as talking to judges. Between matches the pit crew works on the robot to make sure that it is fully functional for the next match. Students in this group must know how to maintain the robot as well as be well versed in the team's non-robot areas, i.e.: sponsors, outreach programs and business topics.

- Work with drivers to make tweaks to robot to improve performance
- Maintain comprehensive knowledge of tools, parts, wiring, and robot function
- Maintain a clean and well-organized pit

- Be comfortable speaking to judges about robot and team
- Handle the stress of making repairs in very short time

4.6.4 Pit Hospitality Crew

The Pit Hospitality Crew works at keeping the pit area a warm and welcoming environment where visitors are encouraged to meet and greet the team and ask questions about whatever aspect of the team or robot interests them. The Hospitality crew works on keeping the pit clean/orderly, handing out swag, and running any contests.

4.7 Student Role Selection

This section covers the thought process behind how students are selected for positions. Selecting students for a position is not an objective process, and there is a fair amount of subjectivity involved in the process. There's not a magical list that will guarantee a student a specific position. It's also important for students to keep in mind that all of these positions are important to the success of the team. Students should not base their success/failure on if they got a position in the pit or drive team, but rather that they did something that contributed to the team being successful at competition.

Positions are selected by the student leadership, with input from the mentors and instructors. Voting is not part of the process since it typically indicates who is most popular—not necessarily who is the best fit for the position. An individual student may fill more than one role.

Positions are not set in stone for the entire season. As the season develops, positions may be added or removed based on the needs of the team. In addition, if a student isn't performing or meeting expectations, they may be replaced by another student. In conclusion, once a student has earned a position, they must still continue to earn that position by their work ethic.

4.7.1 Leader Requirements

Student leaders oversee the operation of one or more departments on the team. On a bigger scale, the mentors look to the student leaders as a voice for the other students, to be role models for other students to emulate, help build unity among the students, mentors and parents.

Being a student leader requires a lot of dedication and a strong work ethic on the part of the student. However, being a student leader is extremely rewarding. In order to become a student leader, a student must:

- Have been on the team for at least one year
- Have been very active during their time on the team (high meeting attendance, community service hours, build season hours)
- Attend competitions

Once a student has been selected as a student leader, they also have the following responsibilities:

- Attend all meetings
- Oversee all projects in their department and make sure they are completed on time and meet the team's quality expectations.
- Build team camaraderie
- Help engage and integrate newer team members to the team
- Be a role model student for other students on the team

4.7.2 Manager Selection

Managers are selected prior to the start of the season. This is to give them time to evaluate what they would like in their leads.

1. Applicants will be determined by Instructor/Mentor.
2. The Instructor/Mentor will hold director interviews for all applicants.
3. After all interviews have been completed, Coach/Instructor and mentors will discuss applicants and make a final decision to determine who will be managers.

4.7.3 Project Leader Selection

1. Applicants will be determined by Instructor/Mentor.
2. The mentors and the new managers will hold interviews for all the applicants.
3. After all interviews have been completed; the managers will make their recommendation to the coach/instructor and mentors. Coach/Instructor and mentors will discuss applicants and help make a final decision to determine who will be project leads.

Picking Project Leaders is not an objective process. This means that there isn't a checklist that guarantees you a position. In fact, each year, there are many deserving students who do not receive positions. Here are some of the things the team mentors look at when picking student leaders:

- **Dedication** - Past meeting hours, community service hours, etc. Have they been doing the bare minimum, or have they been one of the top students? What kind of outside commitments do they have?
- **Past Performance** - How has the student performed in jobs in the past? Have they struggled to get assignments done on time? Have they been proactive or passive?
- **Role Model Characteristics** - Consciously or subconsciously, students will emulate the student leaders. Is the student someone we want other students to emulate?
- **Follow Through** - Talk is cheap; Has the student followed through on things they said they were going to do? Has the student been reliable?

- **Attitude** - Has the student had a positive team-first attitude? Or have they been more concerned about personal glory?
- **Maturity** - Has the student proven they can be mature enough to handle the added responsibility?

Seniority or age is not a factor in the decision-making process. The team mentors believe that positions should go to the 'best' person, not the person with the most seniority. It is not uncommon for sophomores or juniors to receive positions over seniors.

4.8 Dress Code

The team attends many presentations and events with a variety of purposes. Throughout these events it's important to project team spirit and professionalism.

4.8.1 Team Apparel

KRA produces team apparel (shirts, polos, hoodies, etc.) that team members can purchase. The price of this apparel varies based on the cost of producing them. The team does not make a profit on its apparel.

4.8.2 Competition Dress Code

Shirts - KRA will provide a T-shirt before the first season competition. Students may be asked to purchase a team polo shirt, and it's recommended that students purchase extra t-shirts. Students will be notified before competition whether they are required to wear t-shirts or polos.

Pants/Bottoms - It is preferred that students wear dark blue jeans to competition. However, any pants worn to competition should not be ripped or faded.

Shoes - First Tech Challenge requires students to wear closed toed shoes at competition. Students who do not wear closed toed shoes will not be allowed in the pit and competition field. This is non-negotiable.

Furthermore, students should consider their position at competitions. For example, if their position requires them to be on their feet a lot they may want to wear more comfortable shoes or even bring a second pair to switch in the middle of the day.

4.8.3 Conference or Field Trip Dress Code

There is not a set dress code for conferences or field trips since the attire varies from event to event. Generally, students should err on the side of being overdressed than being underdressed. If students are unsure of what to wear, they should ask a mentor or student leader.

Note: Team apparel worn at conferences cannot be ripped, faded or modified (frayed, fringed, sleeves cut, etc.)

Shirts - If a polo shirt is required and the student does not have one, a polo shirt will be loaned to them.

Pants/Bottoms - Business attire means slacks, dress pants, or skirts should be worn. Skirts should be an appropriate length, extending below the fingertips when arms and hands are held flat against the body. Shorts of any kind should not be worn at a conference. Shorts maybe permitted for field trips, but please contact a mentor or student leader for clarification.

Shoes - Open toed shoes are okay, if they're appropriate for the type of conference/field trip. Open toed shoes are never allowed during competitions.

4.9 Online Access & Use Policy

Student team members will need online access to perform many tasks. Parents are ultimately in charge of their student's online access. The coaches respectfully request that each student be able to at least have a gmail account to access the team folders and work on the notebook.

Depending on their role, students may need access to download and install software, examine YouTube videos, access public forums, and access vendor web catalogs. It's highly recommended but not required that each student have access to a laptop they can bring to practice.

Parents please discuss any concerns you might have with the coaches, and we will do the best to accommodate. Some students may not yet be mature enough to handle the responsibility, and we will certainly understand.

Practice time is work time. Students are not allowed to be spending practice time internet surfing or playing video games or other non-value-added computer activity. Violations of this policy will result in warnings. Repeated warnings will result in loss of computer privileges during practice.

4.9.1 Central Team Files

Teams use a KRA Google Drive as a central repository of computer files. It's recommended that students have a gmail account and Chrome browser to allow them to access to the drive and ability work on the files. The files are often edited using Google Doc tools that allow real time editing so that multiple persons can be working on a document at the same time.

4.9.2 Software

There are many optional software packages that a student may want to install depending on the interest in learning. The following list touches on several that KRA students have been using.

- For word processing, spreadsheets, and presentations the Microsoft Office products are common and recommended.

- A free alternate for office programs is the Google Docs/Sheets/Slides programs that are accessed thru the Chrome Browser.
- GIMP is a free and comprehensive raster image editing software that can be used creating marketing materials. GIMP can be downloaded from <https://www.gimp.org/>
- Blender is a free and comprehensive 3D animation, rendering, and video editing software that can be used for team video creation. Blender can be downloaded from <https://www.blender.org/download/>
- Inkscape is a free and comprehensive vector image editing software that can be used for creating marketing materials like t-shirts and swag where a vector file is essential. Inkscape can be downloaded from <https://inkscape.org/>
- Computer Aided Design (CAD) software can be acquired with a free student license. The process for registration, download, and install is a bit more tedious (be patient). There are many good CAD programs. The program KRA is currently using is Autodesk Inventor. The front desk for getting a student license is here: <https://www.autodesk.com/education/free-software/featured>
- Autodesk Sketchbook is a program specifically designed for making sketches. This program can be downloaded for free at <https://sketchbook.com/>

4.9.3 Programming Resources

In FTC robotics, students need to learn the Java language in general and then apply Java language skills by programming within the Android IDE utilizing the `ftc_app` master.

If a student has never programmed before and needs an introduction to object oriented programming there is a free and fun to use Java Script course at Khan Academy <https://www.khanacademy.org/computing/computer-programming/programming>. This requires no software installation and is very interactive. Taking the whole course will give a good intro to programming and take the student through some important object-oriented programming concepts. The downside is that the programming will be done in Java Script which is not quite the same as Java. Further experience with Java and coding for the robot will have to be obtained elsewhere.

To get a quick start to learning Java a student can follow the free course at <https://www.learnjavaonline.org/>. Each lesson has an interactive programming window so no software is needed. The lessons are very short and simple with no video so it's easy to get thru the course quickly. For this course the student will be using actual Java syntax.

A free structured, thorough, and high quality Java self-learning experience is available thru www.sololearn.com. This course is interactive and contains exercises/quizzes at each step to complete the course. One drawback is that a user could skip the "Try it yourself" exercises and diminish the overall learning experience.

A paid structured, thorough, and high-quality Java self-learning experience is available thru www.codecademy.com for a fee. This course is interactive, and it also contains exercises that need to be completed before the course will continue. A monthly subscription is \$40/month. A yearlong subscription is \$20/month (\$240). This is a fair price in comparison with signing up for a formal class with an instructor (typ. \$500 or more).

One can learn the Java programming language by completing the Oracle Java Tutorial which is available at <https://docs.oracle.com/javase/tutorial/>. This tutorial is very dry and really aimed at adults, but it is a good resource to keep handy since it comes directly from Oracle (the creator of Java).

To program the robot on a computer the following free items must be installed:

1. Download and install Android Studio from here <https://developer.android.com/studio>
2. Go to GitHub and create an account if you don't already have one <https://github.com/>
3. Go to the FTC public repository at https://github.com/ftctechnh/ftc_app
4. Download the latest release of the FTC robot controller app by clicking on the 'Clone or download' button and downloading the zip file

5. Extract the contents of the ftc_app into a folder of your choice
6. Open Android Studio and on the welcome screen select 'import project'
7. Select the folder where the ftc_app was extracted to and click 'OK'

A much more comprehensive overview of the setup process with screenshots, including phone setup steps and introductory robot programming steps, is available from FIRST at: https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/android-studio-tutorial.pdf

A step-by-step video series with beginner instructions for programming the robot is available on this YouTube playlist:

<https://www.youtube.com/playlist?list=PLEuGrYl8iBm7wW9gyxpLDhBJAOWDZid1P>

Documentation for the ftc_app Classes is available at:

http://ftctechnh.github.io/ftc_app/doc/javadoc/index.html

4.9.4 Part Catalogs

Vendor websites for selling robot parts are important resources for design. In addition to listing catalog parts these sites also list specifications and guidance material for using their parts. Vendors also have links to 3D CAD files for the parts in many cases. Students, particularly on the Engineering Team, are encouraged to make themselves familiar with the common vendor websites and parts.

- GoBilda - <https://www.gobilda.com/>
- ServoCity - <https://www.servocity.com/>
- AndyMark - <https://www.andymark.com/>
- REV Robotics - <http://www.revrobotics.com/>
- Modern Robotics - <https://modernroboticsinc.com/>
- VEX Robotics - <https://www.vexrobotics.com/>
- PITSCO (Tetrix) - <https://www.pitsco.com/>
- McMasterCarr - <https://www.mcmaster.com/>
- Misumi USA - <https://us.misumi-ec.com/>
- Stock Drive Products - <https://www.sdp-si.com/>
- Adafruit - <https://www.adafruit.com/>

4.9.5 Social Media

The FIRST community has many avenues to stay connected. Students can find links to the entire official FIRST sponsored connections here: <https://www.firstinspires.org/stay-connected>. These are the places where FIRST will make official announcements regarding game & season updates. The Forum is the only official outlet where rule interpretations will be posted. Students need to remember that rule interpretations outside of the game forum are unofficial and subject to error. FIRST also frequently has live streaming on twitch.tv

Students may also want to be aware that there are robot community servers on Reddit and Discord. Season stats, which are important for scouting, can be found on theorangealliance.org and ftcstats.org.

5.0 Parents

Parent support is an important part of the Kerrville Robotics Alliance. Parents can help in a variety of ways.

5.1 Expectations

The following are expectations KRA has for the parents of student team members:

- **Provide timely transportation for their child, making sure that they are on time and ready to participate.** It is important that students arrive on time for events. If a student must come late, they should let a mentor or student leader know ahead of time. Some events, like when we meet to ride together to competition cannot be delayed. If your child is late, they run the risk of missing the bus or caravan. Please be on time to pick up your child. Team mentors will wait with students until they are picked up, but please be respectful of their time.
- **Do not send their child to robotics if they are sick.** It's easy for germs to pass from a sick student to other students and mentors. Students who come to robotics sick will be sent home.
- **Respect the team, its mentors, and its sponsors.** It is important that parents are respectful of the team and its goals. Collectively the team spends thousands of hours every season on design, construction, programming, and developing game strategies. While you may not always agree with some of their decisions, please trust that they have the best interests of the team in mind.
- **Please bring concerns to the coach/instructor and/or mentors early and privately.** If you have any questions or concerns about the team or your child, please bring them to the attention of the mentors early on so they can be addressed and not compound into larger issues

5.2 Parent Team Support

Parents who are interested in helping KRA can do so by helping to raise travel funds, volunteering at events, becoming a mentor for a project team, and supporting the team at competitions.

- **Fundraising** - The parents can help raise money to offset the cost of student travel. Parents can help by donating their time by volunteering to help at team outreach programs and team events. Anything helps!
- **Volunteering at Events** - Robotics events require adult volunteers such as judges, referees, etc. Prior to an event, a list of needed volunteers and the requirements for those positions will be sent out to the parents.

- **Supporting Team at Competitions** - This can be done in many ways including helping with lunch, cheering on the team, running errands, etc.
- **Mentoring a Project Team** - Robotics is about so much more than robots so even if you don't feel like you know anything about robots consider whether you have other talents like accounting, graphic design, animation, film making, marketing, and public speaking that you could use to inspire and help kids to learn. Of course if you do know about programming, CAD design, engineering, and fabrication please consider if you can share some of your time and talents to help inspire the next generation.

5.3 Parents at Competitions

There is nothing that can explain the excitement of a FIRST competition. KRA encourages parents to attend competitions.

If parents are planning on traveling to a competition, we encourage them to let the team know. There may be options for parents to book travel arrangements with the team depending on room availability and schedule. Coaches will notify parents of availability, and parents need to respond by a set deadline if they are committed to a reservation. Parents are expected to provide their own payment.

When parents attend competitions, we ask that you respect their student's roles on the team. Every student has a job when we compete, and it's important to the team's efforts that students are focused on their job.

5.4 Supporting Your Student

One of the best ways for a parent to support their child is to give them the tools to be active and engaged members.

FIRST can be a highly rewarding experience with lots of lifelong benefits, but it's also a demanding program. Your child will likely ask you for rides to and from events on the weekends, and these events go a long way in helping your child 'fit in' with the team since a lot of team bonding happens at these events.

In addition, remind your child that it's important they be active participants. Showing up to meetings and sitting in the back of the room waiting to be asked to do something doesn't work. There are a lot of students on a team, and the students who sit around waiting for something to be given to them usually get passed over for kids who come and ask for something to do.

Robotics teams are a new experience and Mentors are going to push students out of their comfort zone from time to time, it's important that you encourage your child to embrace these new experiences rather than run from them.

Parents can help their child by equipping them with access to computers, software, and training above and beyond what they experience on the team. The team has

limited resources and meeting hours and most of that time will be spent on team-oriented activities. Students are encouraged to pursue their learning of computer aided design, programming, word processing, graphic design, videography, animation, web design, etc. outside of team practice if possible. Many software programs are free or free under an educational license agreement. An ideal computer is a capable laptop since it can be transported to and from team practice on a regular basis. Training can be done in self-study, paid or free online courses, or public education where available. Please ask mentors about further information.

Parents should keep in mind that robotics isn't for everyone. Some students don't like the team aspect, some don't like competition, and some just aren't interested in STEM or robotics. It's important not to force your child to stay on a robotics team if they're truly not interested. This doesn't mean they're not fit for STEM or robotics, maybe it's just not right for them now. But it's not fair to them, the mentor, or the rest of the team to force them to keep coming

5.5 When Parents Get Notified

Often parents ask mentors when parents can get involved with discipline. The mentors believe that since these students are in high school, it's important for them to learn how to handle things on their own. This is part of the growing process. However, if there is a situation where the mentors feel the student's safety or well-being is a concern, or the student is being kicked off the team, then parents will be notified of what's going on.

6.0 Mentors

These mentors are heavily involved with the team and its management. Unless there is a work or personal conflict, mentors usually travel with the team to competitions.

6.1 Requirements

Mentors must meet the following criteria:

- Be over the age of 18
- Be a high school graduate, preferably 2-4 years removed from high school.
- Be registered through FIRST as a volunteer

6.2 Expectations

The following are the expectations of all Mentors:

- The safety and well-being of the students is the top priority.
- Follow the FIRST Youth Protection Program (FYPP) Code of Conduct
- It is highly recommended that mentors do not friend/follow/etc. students on social media (Facebook, Twitter, Instagram, etc.) until after they have graduated from high school. This is to protect the mentor as much as it is to protect the

student. As adults, we sometimes post things to our personal social media accounts that students don't need to see or know about.

- Any communication (phone calls, text messages or emails) should be related to team activities, academic problems, or career concerns. It is recommended that a parent, the coach/instructor or another mentor be copied on any written communications with a student.
- Whenever possible a mentor should not be alone with a student. If you need to talk to a student in private, do it with another mentor. If the student only wants to talk to you one-on-one, do it in a room where other people can see you.
- Any mentor who believes that a student may be the victim of, or at risk of, abuse (emotional, physical or otherwise) from any source is required to report their concerns. Do not attempt to investigate or confront the suspected offender(s). Concerns should be reported to the FTC Coach/Instructor immediately.

7.0 Resources

More information about FIRST, the season challenge, rules, and team development is published officially at <https://www.firstinspires.org/>. This is also the location for registering a student team member, mentor, or event volunteer.

Appendix A – Handbook Acknowledgment Form

I _____ (Team Members Printed Name)

Hereby confirm that I have read the Kerrville Robotics Alliance Handbook for the current season _____ (2019-20) and understand that it describes the conduct and behavior expected of me as a member of a Kerrville Robotics Alliance. I was informed this handbook will be updated from time to time and I will be responsible for reading the updates.

Signature: _____ Date: _____

Witness Signature: _____ Date: _____

Appendix B – Team Role Assignment Worksheet

Role Assignment Worksheet

Business Manager	
Marketing Specialist	
Media & Networking Coordinator	
Business Notebook Coordinator	
Outreach Director	
Engineering Manager	
Engineering Notebook Coordinator	
Design Team	
Game Analyst	
Build Team	
Lead Programmer	

Appendix C – Team Application Form

Available online at

<https://forms.gle/1PuZiPLujY3ppyXC9>