

**AMERICAN HERITAGE CHARTER ROBOTICS
GRADES 9-12 HANDBOOK
2016-17**

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WELCOME

Congratulations on joining the American Heritage Charter Robotics FRC Team, The Daedalus Project. We think you will find your experiences very rewarding. This handbook is intended to give you an understanding of the program and your responsibilities as a team member. In the following pages, you will find information relating to team membership, organization, expectations, activities, events, travel, finances and many other areas of interest. Please review all of the information very carefully. If you have any questions that this guide has not covered, or if there are questions regarding any robotics topic, do not hesitate to ask a mentor. You are encouraged to share this manual with your parents, and keep it handy for future reference. The Daedalus Project meets the entire school year to complete our objectives.

VISION/MISSION

The vision of the American Heritage Charter Robotics Program is to stimulate intellectual curiosity, enhance critical-thinking abilities, build problem-solving skills, develop a love of science and technology, and foster a culture of excellence. It is the mission of the American Heritage Charter Robotics Program to provide a positive team experience through robotics and promote science and technology within the school and in the greater community. The team experience will allow students to develop communication, project management, and interactive skills, as well as build a sense of community and encourage dedication to a common goal.

FIRST ROBOTICS

The American Heritage Charter Robotics Team at ECHS is a part of *FIRST* Robotics, which aims to help high school students get a glimpse of the world of science and engineering, ultimately assisting them to choose a career in a technical field. This is accomplished through building a robot and competing in tournaments, and allowing students to interact with professionals in many fields. Our program is a year-long venture. It is our goal to help team members:

- Gain an interest in the different fields of science and engineering
- Develop leadership skills
- Develop overall character
- Develop critical-thinking and problem-solving skills
- Build self-confidence
- Learn to work in a team environment
- Prepare students for real-world situations
- Demonstrate gracious professionalism at all times

NEW COURSES

Starting in the 2016-17 school year, students will be able to receive five elective credits per semester by successfully completing the coursework that that will run concurrent with team meetings. We will offer two separate courses:

- *Introduction to Robotics* – For students who have had no prior experience on a robotics team, and
- *Intermediate Robotics* – For students who have at least one year of experience on an FTC or FRC robotics team.

The courses will meet at the same time, but will be offered separate curriculum during the class period. Both courses will provide training in:

- Safety,
- First aid,
- Shop organization, and
- The design process

The introductory course will then focus on:

- Identification and use of the mechanical and structural components of the robot,
- Use of hand tools and power drills,
- Fabrication and assembly of robot components and subsystems,
- And basic electronics, focusing on robot electronic components and theory

The intermediate course will go deeper into similar categories, focusing on:

- Design through SolidWorks and using 3-D printers
- Hand-held power tools and the use of larger shop equipment (mill, lathe, saws, etc.)
- Fabrication and assembly using more advanced equipment and jigs
- Full understanding of the uses of different mechanical, structural, and pneumatic components of the robot,
- A more in-depth look at electronic components and the theory behind them, and
- An introduction to programming and robot control systems

The classes will meet on Mondays and Wednesdays, from 3:00 – 5:15 PM, all year. During the build season, the team will meet for additional hours, but people who are only enrolled in the class, and not members of the team, will not be required to attend for the additional times.

OPPORTUNITIES

LETTER IN ROBOTICS

Students may receive a Letter in Robotics for outstanding contributions to the team. The Letter is intended to signify sustained effort beyond the ordinary. To be eligible to receive a Letter in Robotics at Escondido Charter High School, a student must meet the following criteria:

1. Complete one full year as an FRC team member in good standing
2. Meet or exceed the eligibility threshold for the Travel Team
3. Attend the local FRC Regional competition
4. Assist with FLL Qualifying Tournament and FTC League Meet at ECHS

Letters and pins will be awarded upon completion of the above criteria. For subsequent seasons, the eligible member will receive a patch that recognizes their years of involvement.

STUDENT MENTORSHIPS

Members of the FRC team are encouraged to mentor our FTC and FLL teams, however, student mentorships are an added responsibility and not a substitute for active participation on the FRC team. Student mentors will be allowed to mentor an FLL or FTC team one day per week during the FRC pre-season, and two days per week during the FRC build season. They will receive FRC attendance credit for the days they spend mentoring other teams. Student mentors will also be allowed to attend FLL or FTC competitions as a mentor and receive credit for FRC team attendance while at those events.

To be a student mentor, you must be approved by the FRC advisor and the FLL or FTC coach for team you desire to assist. To be approved to serve as a student mentor on and FLL or FTC team, the student must:

- be a member in good standing of the FRC team,
- meet the attendance requirements for the FRC Travel Team, and
- possess sufficient expertise related to the team's need

Student mentors may receive community service credit for the hours they serve.

SCHOLARSHIPS

There are many scholarship opportunities associated with the *FIRST* program. Through *FIRST*, more than \$10 Million dollars in scholarships are given out for more than 60 colleges and universities in the US and Canada. Moreover, *FIRST* is a much respected organization among many top universities in the US, and participation in *FIRST* Robotics will increase a student's chances of getting in and acquiring scholarships.

During their junior year, it is important for students to concentrate on the skills needed to score high on the ACT and SAT tests. College entrance and many scholarships are based upon these scores, as well as high school transcripts.

Scholarship opportunities for the new *FIRST* Robotics Competition season are typically finalized and posted by September 30. The deadline for scholarship application submissions is typically early to mid-March. Scholarship contributors typically select recipients by early April and notify *FIRST* of the recipients' names and team numbers.

TEAM EVENTS

***FIRST* LEGO LEAGUE QUALIFYING TOURNAMENT (NOVEMBER 5, 2016)**

Every year, we host a *FIRST* LEGO League Qualifying Tournament attended by 24-28 FLL teams. The tournament is an all-day event, typically held on the first Saturday in November. The tournament is staffed by members of the FRC and FTC teams, as well as parents and volunteers from our sponsoring organizations and the University of San Diego.

Team members are expected to help with the setup prior to the event and to participate as volunteers on the day of the event. Team members will receive Community Service credit for the hours they spend. Setup for the event will take place after school on the Thursday and Friday prior to the event. Depending on the number of team members who participate, we are usually finished by 6 PM on each of those days. The Saturday event lasts all day, starting at 7 AM and ending around 6 PM.

***FIRST* TECH CHALLENGE LEAGUE MEET (DECEMBER 10, 2016)**

Our FTC team will host two league meets this year – one in December and one in January. Since the second date conflicts with the FRC kickoff, our team will only be providing assistance at the first League Meet on Saturday, December 10th, 2016. Typically, we will spend a few hours on Friday, December 10th, setting up the venue, and some members of our team will assist FTC team members in running the event on Saturday, December 10th.

***FIRST* TECH CHALLENGE SOUTHERN CALIFORNIA REGIONAL CHAMPIONSHIP EVENT**

(FEBRUARY 25, 2017)

For the first time, we will also be hosting the FTC Southern California Regional Championship event. We will be providing space in the theater, gym, student union, and other classrooms on the ECHS campus. The event will be run by the FTC Regional Committee, but our FRC team will be filling key volunteer positions and helping with the setup on Friday night, and takedown on Saturday night.

FRC REGIONAL TOURNAMENTS (LATE FEBRUARY – MID-APRIL, DATES TBD)

Regional Tournaments are scheduled every weekend in March across the United States and in foreign countries. The tournaments are generally scheduled to run Thursday through Saturday, but many regionals are now running Friday through Sunday. We will not know which events we will be participating in until sometime in October. The events typically follow the same schedule every year:

DAY 1: Uncrate the robot, set up the pit, finalize repairs, robot inspection, practice

DAY 2: Opening ceremony, seed rounds, some awards, evening team activity

DAY 3: Finish the seed rounds, final rounds, final awards, evening team activity

During the Regional Tournaments, robots will be placed in alliances of three robots each. Two alliances (6 robots) will take the field at a time. Alliances will be randomly assigned during the seed rounds. Each team will participate in approximately 9-10 seed rounds, depending on the number of teams at the event.

For the final rounds, the top 8 teams will select their alliance partners. 24 robots in total (8 alliances) will participate in a double-elimination playoff. The teams on the winning alliance will be eligible to attend the Championship Tournament in April.

Other awards will be given out at the Regional Tournament, based on information submitted in the awards applications and conversations between judges and team members at the competition. The rookie team that wins the Rookie All-Star Award and the veteran team that wins the Chairman's Award will be eligible to attend the Championship Tournament in April.

CHAMPIONSHIP TOURNAMENT (END OF APRIL – DATE TBD)

The Championship Tournament has been held in St. Louis, Missouri for the last few years. Starting in 2017, there will be two championship events at various locations. Approximately 800 teams from around the world participate. The Championship Tournament runs Wednesday through Saturday in much the same manner as the Regional Tournaments. There is typically a major team activity planned for Saturday night.

If the team becomes eligible to attend the Championship Tournament in April, a decision will need to be made, immediately, whether or not to ship the robot to the championship venue. Participating in a Championship Tournament can cost a team about \$25,000.

DEL MAR FAIR (JUNE 2017)

Team San Diego typically sponsors an off-season robotics demonstration tournament at the Del Mar Fair. The demonstration usually takes place on the first Saturday of the fair

TEAM MEMBERSHIP

GENERAL TEAM ELIGIBILITY

To be eligible to participate on the *FIRST* Robotics Competition team, you must be registered as a student at Escondido Charter High School, in grades 9-12, have a minimum 2.5 GPA, and not be failing in any class. If, at any time, the student's GPA should fall below 2.5, he/she will be placed on probation and will have five weeks to bring the GPA back up to 2.5. If, at the next five-week grading period, the GPA is not at least 2.5, the student will be dropped from the FRC team. The robotics advisor will check grades after every reporting period.

TRAVEL TEAM ELIGIBILITY

ELIGIBILITY THRESHOLD

To be eligible for consideration as a member of the Travel Team, and earn the privilege of traveling to robotics tournaments outside of San Diego County, the student must:

- be a team member in good standing,
- have a minimum attendance rate of 80% (including excused absences),
- have a maximum of one unexcused absence,
- assist in the FLL Qualifying Tournament and FTC League Meet at ECHS, and
- attend all local team events and activities.

SELECTION CRITERIA

Eligible team members will be selected for participation on the travel team based on the following criteria:

1. *Team Need:* We will limit the number of positions on the travel team to the minimum number necessary for the team to perform well at a regional event. We will select only those students who are best able to perform in those positions.
2. *Consistent Demonstration of Good Judgment and Positive Behavior:* Each team member is an ambassador of our team. Solid behavior choices should be demonstrated at all times, in and out of school activities.
3. *Ability to Commit to a Project:* Your word is very important. Don't take on a task you can't perform. If you are having problems with a project, ask for help. There is no excuse for a broken promise.
4. *Ability to Work Independently and as a Team Member:* Working independently, with little or no direction, shows dedication and willingness to learn. Being a team player and supporting team decisions is just as important.
5. *Demonstration of Honesty and Integrity:* Honesty and integrity are highly valued attributes. Travel Team members must demonstrate their trustworthiness.
6. *Time to Spend on Activities:* This team requires many hours of a student's free time. Careful planning and scheduling may be required to stay actively involved. In some cases, choices regarding other activities may need to be made.

TEAM MEMBER EXPECTATIONS

Participation in the FRC program requires a huge time commitment. It is understood that our students are very busy in many other school activities, and these activities are encouraged and supported by our team. However, it is the responsibility of the students to manage and balance all of their activities. Sports teams, clubs, and robotics will place demands on your time. Sometimes, these activities can be accommodated to the satisfaction of all parties. Other times, the conflicting activities cannot be reconciled. When that happens, students will need to choose between the two and decide which activity they will be putting their time and effort into. Please discuss this issue with coaches and mentors before making a final decision.

ATTENDANCE REQUIREMENTS

Returning students who sign up for the team will also sign up for the Intermediate Robotics class, and will be expected to attend all class meetings, just as they would for any other class on campus.

In addition to attendance at class meetings, members of the team will also be expected to participate in team activities and attend additional hours during the build season. Regular attendance at team meetings and events is vital for the team's success. Students who join the robotics team must commit to regular attendance that includes arriving on time and staying until the end of the meeting or event.

In the second semester, we will run the team on two tracks. Students will be able to choose which track they would like to participate in, as long as we have an even number of students signed up for each track. Starting in January, the two tracks will be:

Track A - Mondays, Wednesdays, Fridays, Saturdays, and holidays, or,

Track B - Tuesdays, Thursdays, Fridays, Saturdays, and holidays

TEAM/CLASS MEETINGS

Pre-Season (August - December)

Mondays, Wednesdays, 3:00 – 5:15 PM

Build/Competition Season (January - March)

Track A

Mondays, Wednesdays, Fridays, 3:00 – 6:00 PM

Saturdays, 9 AM – 3 PM

Holidays (MLK, Lincoln's BD, Washington's BD), 9 AM – 3 PM

Track B

Tuesdays, Thursdays, Fridays, 3:00 – 6:00 PM

Saturdays, 9 AM – 3 PM

Holidays (MLK, Lincoln's BD, Washington's BD), 9 AM – 3 PM

Post-Season (April - May)
Mondays, Wednesdays, 3:00 – 5:15 PM

TEAM EVENTS

FLL Qualifying Tournament
Setup Friday, November 4, 2016, 3-6 PM
Tournament Saturday, November 5, 2016, 7 AM – 5 PM

FTC League Meet
Setup Friday, December 9, 2016, 3-6 PM
Tournament Saturday, December 10, 2016, 7 AM – 2 PM

FRC Kickoff
Saturday, January 7, 2017, at the shop, 8 AM - 4 PM

FRC Bag Day
Tuesday, February 21, 2017, at the shop, 3 PM to 12 AM? (This is the last day to work on the robot before bagging - no later than midnight.)

FTC Southern California Championship Event
Friday, February 24, 2017, 3 PM – 9 PM
Saturday, February 24, 2017, 7 AM to 6 PM

FRC Regional Competitions (usually in March)
Away Regional (travel team only) – usually Thursday through Monday (including two travel days)
Specific dates and times TBD

San Diego Regional (everyone) – usually Thursday through Saturday
Specific dates and times TBD

FRC Championship Competition (April 2017 - TBD)
Travel Team only - Wednesday through Sunday (including two travel days)

Demonstrations (must attend at least one)
3-4 times throughout the year, in the late afternoon/early evening
Del Mar Fair – usually the first Saturday in June
Dates and times TBD

CLASS ABSENCES

For class periods, the general attendance rules for ECHS apply. For team activities – beyond the hours of the classes - the following rules will apply.

EXCUSED ABSENCES

There will be legitimate excuses for missing meetings and/or events, but team members should do what they can to limit excessive absences. Team members will be considered to have excused absences under the following circumstances:

Health Concerns

A team member will be considered excused if he/she:

- is ill and did not attend school that day,
- becomes ill while at school and needs to go home (parent verified), or
- has an appointment with the doctor/dentist.

Academics

A team member will be considered excused if he/she:

- is attending tutorial and has a signed tutorial attendance form,
- is attending class at Palomar College, or
- utilizes a Homework Pass (see Homework Passes).

Employment

A team member will be considered excused if he/she is working at a legitimate place of business.

HOMEWORK PASSES

We understand that there will be times when students are overwhelmed with classroom assignments and work in the robotics shop. We are addressing these concerns by issuing homework passes. Each team member will be issued four (4) half-day homework passes at the beginning of the year. Once the passes are received, they are the responsibility of the student to control and will not be replaced if lost or stolen.

Each half-day homework pass will excuse a team member for up to four hours of absence from a single meeting or event (one day only). Hours cannot be carried over to any additional days. Two (2) half-day passes may be combined to excuse the team member from a full-day activity (such as a qualifying tournament or a Saturday build day).

Half-day homework passes may be redeemed at any time during the year, but should be reserved for those times when academic assignments and robotics activities are heaviest. Students using a half-day homework pass should inform the advisor ahead of time that they will not be in attendance, so alternative plans can be made for their absence.

OVERALL ABSENCES

If a team member is absent for more than 25%, but less than 50% of the team meetings, even if the absences are excused, his/her parents will be contacted to discuss whether or

not the student and/or the team will benefit from his/her continued participation in the program. If a team member is absent for more than 50% of the team meetings, even if the absences are excused, the team member will be dropped from the team.

CONSEQUENCES FOR UNEXCUSED ABSENCES

A team member's absence will be considered unexcused if it is not covered under one of the categories of excused absences, and the student has either used or lost their half-day homework passes. The consequences for unexcused absences are as follows:

1st Unexcused Absence – The team member will receive a warning, and his/her parent/guardian will be required to sign a form acknowledging that a second unexcused absence will result in a loss of eligibility for consideration as a member of the Travel Team.

2nd Unexcused Absence – The team member will not be eligible for consideration as a member of the Travel Team, and his/her parent/guardian will be required to sign a form acknowledging that a third unexcused absence will result in the team member being barred from attendance at any Regional or Championship competition.

3rd Unexcused Absence – The team member will not be allowed to attend any Regional or Championship competition, and his/her parent/guardian will be required to sign a form acknowledging that a fourth unexcused absence will result in the team member being removed from the team.

4th Unexcused Absence – The student will be removed from the team.

COMMUNICATIONS

EMAIL ADDRESSES

Each team member will provide a valid email address that they check regularly for robotics communications.

EMAIL CONTENT

The content of all emails sent to robotics team members, parents, and mentors must be appropriate for the school setting and must be in conformance with the technology guidelines set forth in the Escondido Charter High School Student Handbook.

CELL PHONES/ELECTRONIC DEVICES

Cell phones and personal electronic devices (other than robotics-related computers) may not be used while in any portion of the robotics shop or field room. You may access your cell phone or electronic device while on break in the lounge or outside of the building. Lockers will be provided for you to store your cell phones and personal electronic devices securely while you are at robotics.

While participating in, or volunteering at, robotics tournaments (FLL QT, FTC League Meet, and FRC Regionals), students may not use their cell phones for any other purpose than

making phone calls or texting items directly related to the tournaments. Students may not play games or access social media sites. Students are not allowed to bring any other personal electronic devices to any robotics events.

UNIFORMS

SHOP ATTIRE

We will ask every student to purchase an apron to wear in the shop on a daily basis as a part of their personal protective equipment (PPE). The color of the apron will depend on their level of proficiency in the shop, as follows:

- White: New team members who do not have previous shop experience, and who are limited to the use of hand tools.
- Red: Team members, with at least one full year of shop experience, who are proficient in using hand tools and hand-held power tools.
- Blue: Team members, with at least two full years of shop experience, who are proficient in using all of the machinery in the shop

TRAVEL DAYS

On travel days, the team will wear a travel uniform, consisting of blue jeans and a team shirt. The purpose of the uniform is to identify team members easily while in public. Hats may be worn, but must not display any company logos or convey any message inconsistent with the team's image or ECHS standards.

COMPETITIONS

On Day 1, team members will wear the current team shirt and blue jeans. On Day 2, team members will wear full Daedalus costumes which require a light colored shirt and khaki shorts, brown socks and closed toe shoes. The costume tunic and accessories will be distributed at the event. On Day 3, team members will wear full Daedalus costumes, the same as Day 2, as designated by the team.

APPAREL COST

Team members will pay for their aprons and team shirts, which will be theirs to keep. Team members will need to purchase two team shirts. Since we are looking to change our image this year, we do not yet know what the cost of the shirts will be, but we will try to keep it under \$20 each.

BEHAVIOR GUIDELINES

A team member's behavior is under scrutiny at all times. It is very important that students understand that they represent Escondido Charter High School, the American Heritage Charter Robotics Program, and The Daedalus Project everywhere they go. To be a member in good standing on the FRC team, a student must meet or exceed the following minimum behavior standards:

BEHAVIOR AT SCHOOL

The behavior of team members in school, and specifically in the classroom, is a message to all regarding the caliber of students on our team. You are looked upon as role models and examples of the best students our school has to offer. You are expected to be polite and respectful to all staff members and refrain from activities that are considered disruptive. Any team member receiving disciplinary action at ECHS is subject to review by the advisor and may be removed from the team.

BEHAVIOR IN THE SHOP

The shop environment requires additional constraints on student actions to ensure safety and maintain a well-ordered, working environment. In the shop, the mentors are responsible for maintaining a safe environment, and student compliance with mentor requests is vital to maintain safety. In addition, horseplay cannot be tolerated, even in a small degree, when working around tools and equipment in the shop.

Students may not always be aware of potential safety concerns, and there may not always be time for a mentor to provide a full and detailed explanation while unsafe conditions exist. To avoid delays that may possibly result in injuries, students should follow a mentor's instructions immediately and seek explanations only after any possible safety concerns have been resolved.

Students are expected to be calm and conscious of their behavior and refrain from any disruptive, dangerous behavior including, but not limited to:

- running,
- horseplay,
- throwing objects,
- touching people with tools, parts, or materials, and
- yelling

BEHAVIOR AT EVENTS

All eyes are on you every minute you are in public. Your behavior is a direct reflection on your character and on our team. A judge or member of another team may overhear what you say to one another and how you say it. Please speak positively at all times – even when you believe your conversation is private. We are a very close family when we travel and conflicts may arise as a result. Students should refrain from spreading rumors and negative comments about one another. If a problem arises with another student, you are expected to speak to a chaperone or mentor immediately. Students are not allowed to have physical confrontations with each other. If that happens, both students will be disciplined in accordance with ECHS guidelines. If this occurs while the team is at a competition, you will be sent home at your expense.

COOPERATION

Students are expected to cooperate at all times. This means that, if a chaperone or mentor requests you to do something, you will comply to the best of your ability. If you feel a

request is out of order, you are encouraged to complete the task then speak to the team's advisor at a more appropriate time. Disrespect towards any chaperone or mentor will not be tolerated and you will be disciplined and possibly removed from the team.

INAPPROPRIATE BEHAVIORS

Inappropriate behaviors include but are not limited to the following:

- Running (on campus, in the shop, and at events)
- Pushing and/or shoving
- Name calling
- Making messes/breaking things
- Fighting
- Swearing
- Stealing
- All other activities that reflect negatively on the team

BOYFRIEND/GIRLFRIEND

In the event that a relationship between students develops or is ongoing, there are certain guidelines that must be adhered to at all times when engaged in team activities, local and away. Team members should always consider robotics to be a work environment. ***Hand-holding, hugging, kissing, and other expressions of affection are prohibited at all times. The couple must travel in a group at all times. Couples may not wander off or sit alone. In other words, they should not appear as a couple but as part of the team. Common sense should prevail at all times.***

CONSEQUENCES FOR BEHAVIOR VIOLATIONS

The chaperones and mentors reserve the right to discipline a team member as necessary for the safety and overall good of the team. The disciplinary process shall be as follows:

- Step 1 The student will be notified by a chaperone or mentor that they are exhibiting inappropriate behavior and will be asked to make appropriate changes to remedy the situation. The team advisor will be alerted. If the inappropriate behavior continues, the process will move to Step 2.
- Step 2 The student's parents will be contacted to discuss the situation and seek an appropriate remedy. If the inappropriate behavior continues, the process will move to Step 3.
- Step 3 The student will be suspended from the team for the next 2 team functions/events or a period of 2 weeks, whichever is longer. During this time they may not participate in any team meetings, team competitions, or any other team activities. If the inappropriate behavior continues following the suspension, the process will move to Step 4.
- Step 4 The student will be removed from the team.

NOTE: If, at any time, the student's actions violate ECHS student conduct rules, the matter will be referred to the school's disciplinary officer.

GRIEVANCE PROCEDURES

There may be times when a dispute arises between a student or parent and a robotics coach or mentor. All parties are encouraged to solve issues at the lowest level prior to filing a formal grievance. In most cases, the parent should meet directly with the robotics coach or mentor to resolve the issue. The director of robotics may participate in this informal conference in an attempt to resolve concerns informally if the complainant expresses a willingness to participate.

Since the robotics program is an after-school program, the appeals process will work through the director of robotics and not a program director from Heritage K-8 Charter School, Heritage Digital Academy, or Escondido Charter High School. If the complainant does not want to participate in the informal resolution process, the formal grievance process is established as follows:

A parent may file a formal grievance in writing at any time and present it to the director of robotics. (Step I). The parent will receive a response in writing within five (5) business days of the filing of the grievance. If the parent is dissatisfied with the disposition of the matter by the director of robotics, they then may file a formal grievance in writing with the executive director of the American Heritage Charter Schools. (Step II). If the parent is dissatisfied with the disposition of the matter by the executive director, they may request arbitration before the Board of Directors of the American Heritage Charter Schools. (Step III). The decision of the Board of Directors of the American Heritage Charter Schools is final.

Travel (FIELD TRIPS, TOURNAMENTS, CHAMPIONSHIP)

Traveling as a team is very exciting and rewarding and is often the highlight of a student's year. A great deal of planning and organization is required to coordinate all of the associated activities. A strong effort is given to make travel an educational/cultural experience. Safety is always the major concern.

PERMISSION SLIPS

A signed permission slip is required for every off-campus team activity. The permission slip must be signed by a parent/guardian, even if the student is 18 years of age or older. If the signed permission slip is not in the possession of the coach prior to leaving the school, the student will not be allowed to attend.

TRANSPORTATION

Two general rules always apply:

- 1) Students are never allowed to drive themselves or others to off-campus team activities, even if they are 18 years of age or older.
- 2) Adults who drive students other than their own children must file proof of the required insurance coverage (see below) and a copy of their driver's license with the school. All insurance coverages must be current.

For liability reasons, there can be no exceptions to these two rules.

MEET AT THE SCHOOL

Teams will meet at the school before heading out to team events. This will allow the coaches to verify that all team members are in attendance and have rides. It will also allow them to verify that all team members have turned in their permission slips. At the end of the trip, all cars should return to the school for student drop off.

CARAVAN

All of the cars should caravan together to the event. This will make sure that everyone arrives at the same time and that no one is left behind due to car trouble or accidents. When travelling as a caravan, no one should take a detour or make an unscheduled stop (including for food, bathroom break, etc.) without having someone in the car (other than the driver) contact the lead driver to make arrangements for the entire caravan to stop.

When travelling by car, you will be allowed to select the car in which you ride. You will need to ride in the same car both ways. If you need to make a change, you must get the approval of a mentor. Seatbelts must be worn at all times.

PRIVATE VEHICLES

As stated above, all drivers who will be transporting students other than their own children must file all of the necessary paperwork with the school prior to driving to any event or activity. The insurance must meet the minimum coverages required by the school and must be current. If the paperwork is not on file with the school, the driver will only be allowed to transport their own children. This rule must be observed by every driver for any robotics team related event. Drivers cannot take more passengers than they have seat belts for, and every student must be in a seat belt at all times while in the vehicle.

Minimum automobile liability insurance coverages are:

Bodily Injury:	\$100,000/\$300,000 per accident
Property Damage:	\$ 50,000 per accident
Medical Payment:	\$ 2,000

SCHOOL VAN

No more than nine students may be taken in the school van, unless the driver has a commercial license that allows them to transport up to 12 students. The driver of the van must be a fingerprinted, school-approved coach, or a school employee.

VENUE RULES

While at the event venue, students must:

- Use the Buddy System. Students should be in groups of two or more everywhere they go.
- Never leave the site. Students must not go to areas that are marked off limits or that are off the property.
- Follow all team rules and mentor instructions.
- Follow all site rules. (Some sites have special requirements such as “no outside food.”)

OVERNIGHT STAYS

In an effort to strengthen team bonding and unity, increase team communications, account for the whereabouts of all team members, and limit the school’s exposure to liability, the following new guidelines have been adopted that will apply to all teams that travel outside of San Diego County and stay overnight in a hotel:

- 1) A parent/guardian, or other adult relative (over the age of 25) must accompany the team member overnight at the event.
- 2) The team member must stay in a hotel room with his/her parent/guardian/relative.
- 3) Team members may not stay in rooms with people that are not their relatives.
- 4) All team members will lodge in the same hotel, whenever possible.
- 5) All team members will eat breakfast with the team at the hotel and lunch with the team at the event venue.
- 6) All team members will eat dinner in the same restaurant, whenever possible.

Our funds for out-of-town trips are limited, so the robotics team will pay for one half of the cost of the hotel room for the team member, and the parent/guardian will need to pay for the other half. If this creates a financial hardship for the family of any team member, arrangements can be made for the team to pay the entire expense. No one will be denied the opportunity to participate due to financial hardship.

Often there is free time in the hotel to get snacks, play in the game room, or swim. If there is a pool, a mentor or chaperone must be present to swim or use the hot tub. Appropriate attire is required. Please check with a mentor or chaperone if there is any question.

STUDENT COSTS

MEALS

All meals are the responsibility of the individual team members. Efforts will be made to have an affordable option available.

INVITATIONAL COMPETITION EXPENSES

If the team should become eligible to attend the Championship Tournament, a large amount of money will be needed in a short amount of time. The typical cost of sending 20 team members to St. Louis, along with mentors and chaperones, is approximately \$25,000. The team could have as little as two weeks to raise the money. Parents and team members will need to decide, ahead of time, how they will cover that expense.

TEAM ORGANIZATION

The team will be organized in a manner that maximizes efficiency and provides the team with a competitive edge. A Student Lead will be selected from returning members at the start of the pre-season. All other team members will be assigned to one of five departments, based on their talents and the team's needs. Student talent will be assessed during a two-month tryout period in the pre-season, and students who make the cut will be assigned to permanent positions within the departments by mid-October. If a student does not make the initial cut, he/she will be placed on a list of alternates. The top two students on the alternate list will be members the team as utility players and may be placed into permanent positions as vacancies arise, according to their talents and motivation.

All team members will participate in general team activities, including the hosting of qualifying tournaments and league meets, safety meetings, strategy and design discussions, and team demonstrations. Each team member will specialize in an activity that falls under one of the five departments listed below.

DEPARTMENTS

FABRICATION

The Fabrication Department is responsible for:

- Design, fabrication and assembly of the mechanical components of the robot
- Performing all repairs on the robot at competitions and demonstrations
- Building all practice field elements
- Identification of needed materials and resources in the fabrication shop
- Maintaining the team's crates and pit structure
- Maintaining and properly storing all tools and equipment in the shop
- Maintaining a neat and clean working environment
- Communicating with other departments
- Following all safety protocols

The type and number of positions within the Fabrication Department shall be:

<u>Description</u>	<u>Quantity</u>
Student lead	1
Chassis fabricators	2
Feature 1 fabricators	2
Feature 2 fabricators	2
TOTAL	7

ELECTRONICS/PNEUMATICS

The Electronics/Pneumatics Department is responsible for:

- Wiring and connection of the electronic and pneumatic components of the robot
- Troubleshooting and fixing electrical and pneumatic malfunctions on the robot
- Setting up and maintaining robot communications with the driver station
- Designing and maintaining the driver station
- Identification of needed materials and resources in the electronics/pneumatics shop
- Maintaining and properly storing all tools and equipment in the electronics shop
- Maintaining a neat and clean working environment
- Communicating with other departments
- Following all safety protocols

The type and number of positions within the Electronics/Pneumatics Department shall be:

<u>Description</u>	<u>Quantity</u>
Student lead	1
Electronics technician	1
TOTAL	2

PROGRAMMING

The Programming Department is responsible for:

- Programming the electronic and pneumatic components of the robot
- Maintaining proper notes within the code and archiving versions
- Configuring the driver station to make the controls easy to use
- Troubleshooting and fixing code
- Identification of needed materials and resources for programming
- Maintaining all equipment used by the programmers
- Maintaining a neat and clean working environment
- Communicating with other departments
- Following all safety protocols

The type and number of positions within the Programming Department shall be:

<u>Description</u>	<u>Quantity</u>
Student lead	1
Programmers	2
TOTAL	3

PUBLIC RELATIONS

The Public Relations Department is responsible for:

- Developing and maintaining an American Heritage Charter Robotics website
- Capturing and editing photos and videos in the shop and at tournaments
- Producing finished slideshows and videos for team use and sponsors
- Producing documents to hand out to other FRC teams at tournaments
- Writing press releases and getting coverage in the media
- Write and submit applications for awards submissions
- Manufacturing team buttons
- Maintaining a neat and clean working environment
- Communicating with other departments
- Following all safety protocols

The type and number of positions within the Public Relations Department shall be:

<u>Description</u>	<u>Quantity</u>
Student lead	1
Web designer	1
Photo/video technician	1
TOTAL	3

SAFETY

The Safety Department is responsible for:

- Providing safety training for all team members and mentors
- Maintaining a log of safety meetings
- Identifying and rectifying safety concerns in the shop and at events
- Keeping a log of safety issues and their resolutions
- Maintaining updated Hazardous Materials Data Sheets
- Monitoring and maintaining fire extinguishers and first aid kits
- Acting as the Safety Captain at FRC tournaments
- Working with student leads to Maintain a neat and clean working environment
- Communicating with other departments
- Following all safety protocols

The type and number of positions within the Safety Department shall be:

<u>Description</u>	<u>Quantity</u>
Student lead	1
TOTAL	1

TOTAL TEAM MEMBERSHIP

The total number of team members shall be:

<u>Description</u>	<u>Quantity</u>
Permanent positions	16
Alternates	2
TOTAL	18

MATERIALS/RESOURCES ACQUISITION

Materials and resources need to be purchased for all departments on an ongoing basis. To avoid duplication of orders and ensure that there is departmental consensus on the materials or resources to be ordered, the student lead for each department will be responsible for filling out and submitting a "Materials/Resources Request Form." The form will include information such as: quantity, part number, description of product, source, and price. The form will be signed and dated by the student lead and turned in to the team advisor.

TEAM LEADERSHIP COUNCIL

PURPOSE

The purpose of the Team Leadership Council (TLC) is to direct the actions of the team, provide oversight for team projects and activities, increase communication between departments, and develop student leadership. The TLC will be a collaborative effort between student leads, mentors, and parent volunteers. It will meet on Wednesdays, from 2:30 – 3:00 PM.

MEMBERSHIP

The membership of the Team Leadership Council will include the five student leads (one from each department), the team advisor and team coach, industry mentors, and parent volunteers.

DECISION-MAKING PROCESS

The Team Leadership Council will make decision by reaching consensus. If consensus cannot be reached, a decision will be based on majority rule with the five student leads, the

team advisor, and team coach voting. The team advisor shall have veto authority over any decision of the Team Leadership Council.

DOCUMENTATION

ENGINEERING NOTEBOOKS

Students on the design and fabrication teams will maintain engineering notebooks. The engineering notebooks may be maintained by a single team member or they may contain the contributions of several team members, but the entries need to highlight the thoughts of all team members and mentors.

Engineering notebooks are not the team's scrapbook and should not be decorated. The notebooks should be simple but informative and should document brainstorming ideas, trial designs, and team strategies. A season summary should be included at the end of the last notebook.

Sample entries would include:

- What the team experienced during the engineering design process
- Drawings and descriptions of the robot during the different stages of design
- Experiences of teamwork and communication during the building of the robot
- Interesting moments, obstacles, and 'A-ha!' revelations
- Lessons learned from the entire experience

Engineering Notebooks do not need to, and should not, appear perfect. They should reflect the team's personality and spirit and reflect an ongoing work in progress. Spelling mistakes, scratches, abandoned pages, or other blemishes should not be of concern. The notebook should reflect the last-minute designs, quick thoughts while designing, or brief notes that may remind the team for an idea later on.

AWARDS SUBMISSION TO *FIRST* (CHAIRMAN'S, ENTREPRENEURSHIP, ETC.)

Awards submissions will be developed by student team members, working with adult mentors. All submissions will be finalized for review by the Team Leadership Council at least one week prior to the submission deadline. The Team Leadership Council will provide feedback on the draft submissions. All final submissions will be reviewed by the robotics advisor prior to submission to *FIRST*. Awards applications will be submitted to *FIRST* at least two days before the deadline to avoid last-minute technical problems.

MACHINE SHOP

SAFETY

Everyone is responsible for safety during team meetings and during the design, build, travel, and event phases of the competition. Basic safety guidelines are included in the student notebook as well as the *FIRST* Safety Manual. For a full understanding of safety procedures, please read the entire *FIRST* Safety Manual.

SAFETY MEETINGS

Safety Meetings will be held once a month, starting in August and continuing through May. Students who miss a meeting must meet with an adult mentor, individually, to review the material covered at the missed meeting. A meeting log will be maintained for all safety meetings and will include the following:

- Date and time of the meeting
- Subject(s) covered
- Names and signatures of participants

At the first meeting of the year, the team will review of the *FIRST* Safety Manual and team members will be directed to read the manual in its entirety. Once a team member is done reading the manual, the/she will sign a safety manual form certifying that they have read and understand the contents of the *FIRST* Safety Manual and will abide by the safety rules it outlines.

RELEASE FORMS

No one will be allowed to work in the shop until they have turned in the AHCS Shop Liability Release Form signed by themselves and a parent/guardian (even if the student is 18 years of age or older).

TRAINING

General safety training, as well as training on specific tools and machinery, will be provided during the Pre-Season. All students intending to use hand tools, power tools, or machinery must be trained on how to operate the specific tools or machines safely. All training will be documented.

SAFETY GLASSES

ANSI-approved safety glasses will be worn at all times while in the shop or while working with parts or tools in the Team Room. Safety glasses will be worn in the pit areas at all tournaments and when packing and unpacking the robot. The drive team will wear safety glasses at all times while handling the robot and while on the field. Anyone who is not wearing safety glasses in these places will be asked to leave the area. If you wear

prescription glasses, and they are not ANSI-approved safety glasses, you must wear approved safety goggles over them, or add ANSI-approved side shields, to achieve adequate protection.

FOOT PROTECTION

All people entering the shop must wear shoes that completely cover the entire foot. Shoes must have closed toes and heels to protect against foot injuries. Flip-Flops, Sandals, Mules, Crocs, etc., are not acceptable when working in the shop, on or near the robot, or while attending *FIRST* competitions.

HORSEPLAY

Horseplay, video games, computer games, and music are not allowed in the shop or Team Room. If work for the day is complete, make sure your ride is coming and work on homework.

HAIR AND CLOTHING

No loose hair or loose clothing is permitted around power tools or machinery. Spinning objects can catch loose hair or clothing and pull you into the tool or machine. If you have long hair, please tie it back or put it under a hat. Do not wear open sweatshirts or clothing with baggy sleeves.

INJURIES

Check –Check the scene.

- Is it safe?
- What happened?
- Who is injured?
- Is someone there who can help you?

Call –Find a supervisor. Call an emergency number. If an emergency occurs, the operator will need to know:

- Your name
- Street Address
- Telephone Number
- Location
- Description of Emergency

Care –After contacting emergency care professionals, use the first aid tips and kit to care for the victim. Remember, the best thing you can do for someone who is severely injured is to help get an emergency care professional as fast as possible.

REPORTING REQUIREMENT

Regardless of severity, report all accidents, injuries, and near misses to your team's mentor and your team's Safety Manager. Even injuries that you determine as minor may become

serious if proper medical attention is not provided in a timely manner. Remember, each minor event can be a precursor to a major event.

GENERAL SHOP RULES

The following general rules shall be observed at all times while in the shop:

- No student shall work in the shop without an adult supervisor on site.
- No student shall work with tools for which he/she is not authorized.
- Safety glasses must be worn at all times while in the shop.
- Ear Protection must be worn when operating stationary machinery.
- Closed-toed shoes must be worn at all times while in the shop.
- All unsafe conditions must be reported to the shop supervisor.
- All debris/clutter shall be cleared from the floor immediately.
- All work shall cease 15 minutes prior to closing, for shop clean-up.

The following stationary machinery shall not be used by any student unless an adult mentor is in the room with the student at the time the machinery is being operated:

- Chop saw
- Band saw
- Mill
- Drill Press
- Lathe
- Sander

SHOP EQUIPMENT/TOOLS

At the end of the shop session, all tools must be accounted for and stored neatly in their appropriate location.

SAFE EQUIPMENT

All equipment must be in proper working condition and must have all safety features and guards in place. If a power tool malfunctions (sparks from a motor, a short, etc.), that tool must be locked out and tagged with both the description of the problem and the name of the supervisor tagging the tool. Only a supervisor is allowed to lock or unlock a tool.

POWER TOOLS

The following rules apply to all power tools:

- Electrical tools must be equipped with a three-wire (grounded) power cable and a three-pronged (grounded) plug.
- Electrical tools may never be powered by daisy chaining cords.
- Attachments used with electrically powered hand tools must conform to the rating and RPMs of the tool.
- Operating limits of the tools must not be exceeded.

- Electrically powered tools must not be used if arcing is noted.
- Electrically powered tools must not be used in areas where there are combustible gases or vapors.
- Cords of electrically powered tools must be safeguarded against crushing, pinching, cutting, and crimping. Any break in the insulation is cause for replacing the cord. Patching or taping the cord is not permitted.
- Never move power tools by pulling on the cord.
- Safety devices must be maintained and used on all powered tools; for example, the blade guard on a circular saw should be in place and in good condition.
- All power tools must be unplugged at the end of a work session.

HAND TOOLS

No tool shall be used for anything other than the purpose for which it was designed.

Hammers

- Hammerheads must be securely mounted on handles, and hammer faces must be free of cracks or irregularities.
- Hammers must not be used as prying tools.
- Driving nails with a machinist's hammer, soft-faced hammers, or tempered tools, etc. is prohibited.

Wrenches and Pliers

- Jaws of wrenches and pliers must be in good condition.
- Adjustable wrenches must be snugly fitted to the nut before applying pressure.
- Extension handles ("cheater bars") must not be used.

Screwdrivers

- Do not use a screwdriver with a broken or bent blade.
- Do not use screwdrivers as chisels or punches, or for prying.
- When using a screwdriver, place parts on a workbench (not in your hand).
- Use screwdrivers with insulated handles for electrical work.

Files

- Files, other than Swiss files, must be equipped with handles.
- Files must be kept clean.
- Do not use files as punches or chisels, or for prying.

Knives

- Keep knives in protective containers or sheathed when not in use.
- Make sure the area is clear around you when using a knife.
- Do not use knives in place of saws, chisels, etc.
- Cutting with knives requires complete concentration and care.
- Always direct cutting strokes away from your hand and body.
- DO NOT USE KNIVES WHEN SAFER TOOLS WILL DO THE JOB!

PARENT/GUARDIAN RESPONSIBILITIES

The parents/guardians of our students are an important part of the success of our team and are considered to be team members. Whether they are mentors, part of a support group, or spectators at competitions, they fill a vital role. There are a number of responsibilities that each parent has as a part of their student being on the team:

1. Parents/guardians are responsible for attending all parent meetings.
2. Parents/guardians are responsible for providing transportation to make sure that students are on time for meetings, build times, and events. Timely transportation must also be provided so that students have rides home immediately afterwards.
3. Parents/guardians are responsible for signing and returning permission slips, waiver forms, and other legal documents on a timely basis for their students.
4. Parents/guardians are responsible for providing the team Advisor(s) with accurate medical/emergency information for their student.
5. Parents/guardians are responsible for providing a general contact phone number and a dependable email address for the team to provide them with information about upcoming events and team opportunities. Email is the primary and often the only method of contacting members of the team.
6. Each family is expected to provide at least one meal during the build season for the entire team (including mentors). The food committee will develop the schedule for dinners. These meals can be homemade or purchased.
7. Parents/guardians are responsible for the conduct of their child until the age of eighteen.
8. Parents/guardians are encouraged to attend events and provide support for the team. These events may be competitions, team gatherings, or other public events.
9. Parents/guardians are encouraged to keep up-to-date with what their child is working on with the team and the progress that the team has made. Parents should stop in at the build site from time to time to see how things are going.
10. Parents/guardians are encouraged to become team mentors. Becoming a mentor adds additional responsibilities but is a very rewarding experience. Parents/guardians do not have to be engineers to qualify to be mentors.

ACKNOWLEDGEMENT

For a student to become a member of the team, the student and his/her parents or guardians must fill out and sign the attached robotics application, acknowledging that they have read and understand the policies contained in this handbook and agree to abide by its provisions.

RELEASE FORMS

In addition, the student and his/her parents or guardians must sign the following forms:

- AHCS shop liability release form
- AHCS medical release form
- AHCS photo/video release form
- *FIRST* liability and photo/video release form (available through STIMS)