FRC Team 319 Handbook

2023 Season

(revised 1/28/2023)

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Section 1: Introduction to *FIRST* Robotics

This Handbook and the documents to which it directs you are intended to serve as a guide for you during this year, providing you with an understanding of the program, your opportunities on the team, and responsibilities as a participant. In the following pages, you should find all the information necessary to have a fantastic season, and if you still have questions, feel free to contact a team mentor or captain. This document may be found in a digital form in the google drive folder, 319 Team Handbooks.

About *FIRST*

FIRST (For Inspiration and Recognition of Science and Technology) was founded in 1989 by Dean Kamen to inspire young people's interest and participation in science and technology. Based in Manchester, NH, the 501(c)3 not-for-profit public charity designs accessible, innovative programs that motivate young people to pursue education and career opportunities in science, technology, engineering, and math, while building self-confidence, knowledge, and life skills. Some Programs within *FIRST* are FRC (*FIRST* Robotics Competition), FTC (*FIRST* Tech Challenge), and FLL (*FIRST* Lego League).

Mission of FIRST

"The mission of *FIRST* is to inspire young people to be science and technology leaders and innovators, by engaging them in exciting Mentor-based programs that build science, engineering, and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership."

FIRST is More Than Robots. *FIRST* participation is proven to encourage students to pursue education and careers in STEM-related fields, inspire them to become leaders and innovators, and enhance their 21st century work-life skills. Read more about the Impact of *FIRST* on the official *FIRST* website.

This worldwide organization strives to inspire students of all ages, and thus has age appropriate divisions that challenge students ages 4-18. *FIRST* LEGO League (FLL) challenges grade-school students to build out of LEGOs and create a solution to a real-world problem. *FIRST* Tech Challenge (FTC), designed for students in grades 7-12, releases a new game each year that teams compete in with a robot. Team 319 is a part of the *FIRST* Robotics Competition (FRC) program, which targets students in grades 9-12. Each year, FRC teams build a 120 lb. robot to compete in alliances of three.

FIRST also has two values that permeate competitions across all four levels: Gracious Professionalism and Coopertition®. *FIRST* has provided the following descriptions for these values.

Gracious Professionalism®

Gracious Professionalism is part of the ethos of *FIRST*. It's a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

With Gracious Professionalism, fierce competition and mutual gain are not separate notions. Gracious professionals learn and compete like crazy, but treat one another with respect and kindness in the process. They avoid treating anyone like losers. No chest thumping tough talk, but no sticky-sweet platitudes either. Knowledge, competition, and empathy are comfortably blended.

In the long run, Gracious Professionalism is part of pursuing a meaningful life. One can add to society and enjoy the satisfaction of knowing one has acted with integrity and sensitivity.

Coopertition®

Coopertition® produces innovation. At FIRST, Coopertition® is displaying unqualified kindness and respect in the face of fierce competition. Coopertition® is founded on the concept and a philosophy that teams can and should help and cooperate with each other even as they compete.

Coopertition® involves learning from teammates. It is teaching teammates. It is learning from Mentors. And it is managing and being managed. Coopertition® means competing always, but assisting and enabling others when you can. One in-game example of this is the yellow totes from the Recycle Rush game of 2015, which needed to be manipulated by both alliances for points. Even if not in the game itself, Coopertition® is embodied in the interactions between teams every day.

"Vision and Mission." *FIRST*

Overview of FRC

The world of FRC is very complex and intricate. This section will serve as a rough overview of FRC to help you get familiar with how the competition is structured, and how each part of the competition affects the whole. More detailed sections can be found in the Appendix.

In FRC, teams create remote controlled robots that compete in a game that changes every year. We find out what the game is in early January and then build a robot to compete in the game. Teams start competing with the robots they built in late February, and competitions are held every weekend through the World Championships in late April, or early May. In order to attend the World Championships, teams must qualify through either the regional system or the district system. In the regional system, teams can qualify by winning a regional event, winning a championship qualifying award, or claiming a wild card bid. In the district system, teams earn points based on their performance within the district, and the teams that earn the most points are invited to the championship.

319 is in the New England District. Every year, 319 gets points based on how well we perform at our first two District Events. If 319 is within the top ~80 teams after all teams in New England have played their District Events, we are invited to the New England District Championship (NEDCMP) at the Big E in Springfield, MA, where we can earn even more points based on our performance. At the end of the NEDCMP, if we are in the top ~20 teams in New England, we are invited to the World Championship, which is in Houston, Texas in 2023. Being in a district does not restrict a team from attending events outside the district, however, and 319 tries to do so if possible.

Each FRC event tournament is roughly the same, with the exception being the world championships. The tournament takes place in two phases; qualifications and playoffs. In qualifications, teams play a series of matches with random alliance partners and random opponents. Teams are ranked based on their performance in these matches and alliance selections are held after all qualification matches have been played. During alliance selections, teams try to assemble the strongest alliance of 3 teams possible, in an effort to win in the playoffs. Ranking high in qualifications is important because it allows a team to pick earlier in alliance selection, increasing the team's chances of forming a stronger alliance. In the playoffs, alliances enter a bracket style tournament where each round is best-of-three matches. Teams play in quarterfinals, semifinals, and finals, where the winner of the finals matches is deemed champion.

Alliance selection is a very critical component to winning an FRC tournament, so all teams have dedicated strategy sub teams that gather data on every robot in every match. This is called scouting. Scouting data is used to help with match strategy, alliance selection, and alliance strategy. Usually, a team gathers scouting information together and analyzes it during a scouting meeting after each day of competition.

In parallel to the FRC tournament, there is a judging process in which teams can win various awards. Awards can range from technical and robot-based, to community outreach and inspiration based. While some awards are judged solely by visits to the pit by the judges, some awards have very specific submission criteria and teams usually dedicate sub teams to producing the submission materials. The most prestigious award in FRC is the Chairman's Award, which is given to the team at the event that the judges feel most strongly represents an ideal FRC team.

Building robots, competing all over the country, and making an impact on the community takes a lot of resources. Teams raise funds through hosted events, corporate sponsorships, and other fundraisers in order to buy materials, help offset the cost of travel, and pay for event registration.

After the season is over, teams reflect on what went well and what could be improved, and decide on which parts of the team to iterate on in order to be better next year. Many teams work throughout the year, continually improving, experimenting, testing, and training new members.

Section 2: Welcome to Team 319

Team 319, Big Bad Bob, from Alton, NH was officially founded with *FIRST* in 1999 by Brian Hikel at Alton Central School. The team moved to Prospect Mountain High School (PMHS) when it was founded in 2005. PMHS brought together students from both Alton and Barnstead. Early on, 319 lacked financial support from the PMHS school board. In 2011, 319 approached the school board to prove to them that *FIRST* was a worthwhile movement for the students and would allow them to prosper in life outside of high school. Since then 319 has had the constant support of the school board, this further jump started the involvement with the community.

319 is located in a rural area of NH with minimal technologically advanced businesses, therefore finding sponsors for the team has been a challenge. The team had to dig deep into connections and ask nearby businesses to sponsor the ever growing team. Growing from zero sponsors, ranging from robotic warehouses to local insurance companies, in 2013, to seven in 2018 has been a monumental accomplishment for 319.

In recent years, 319 has been joined by mentors from the school, community, and alumni. 319 has achieved success on the field as well as increased participation from the student body.

Mission

Our mission at FRC 319 is to openly share resources with ingenuity, originality, and resourcefulness while encouraging the personal growth of our students and their ability to recognize and be proud of their incredible capabilities.

Members and Demographics

Currently on 319, there are 15 students.

Why Join 319

319's mission is to increase the opportunities available to Alton and Barnstead students through the *FIRST* program. Through Team 319, students are exposed to all of the aspects of running a competitive robotics team including, but not limited to, software engineering, mechanical engineering, electrical engineering, graphic design, marketing, business operations, event management, and data processing.

Benefits of joining Team 319:

- Hands-on learning from people who do real-life engineering and business management every day.
- Joining a great community of fun students and mentors.
- Over $80 million of available scholarship money.

- It looks great on your college application, too – and your mentors can write recommendation letters and be job references for you!

Our Identity

Team 319 has a strong reputation in the *FIRST* community because of the identity we cultivate. As members of Team 319, it is our responsibility to remember and maintain these values. We are:

- **Friendly** - At all times, we are a team that is friendly. This includes other students and faculty at PMHS, other teams, event staff and volunteers, and other 319 members.
- **Involved** - 319 members are active on the team, and within the local *FIRST* community, Alton and Barnstead community, and the greater *FIRST* community.
- **Competitive** - 319 always strives for excellence on the field as much as off the field. FRC is a competitive sport, and winning feels good.
- **Open** - While we like to win, we recognize that *FIRST* has a larger purpose of Inspiration. Because of this, our robot and process is not kept secret. In fact, we actively share our team's resources within the *FIRST* community.

Open Concept

"A *rising tide raises all boats.*"

As stated in Our Identity, Team 319 is an open team. We do not keep our robot designs, software, or other procedures secret from other teams. We actively share our team's resources within the *FIRST* community because we recognize that the larger purpose of *FIRST* is Inspiration. Each season, 319 releases our CAD live online and actively answers any questions that other teams may ask. We also publicly share our software, and strive to help any team wishing to use parts of it.

Actively sharing our resources has resulted in collaborations between 319 and the greater FRC community. In 2018, 3847, from Houston, Texas, shared their collector concept with us, and we worked with them to make one of the most successful gripper designs of that year. In 2019, several teams liked the design of our elevator bearing blocks and implemented them on their own robot. Through this, we were able to learn from their experiences and make our designs better. Sharing our code has helped many teams implement features they weren't originally capable of before, allowing them to be more successful on the field.

Being an open team since 2017 has helped 319 become a better team, has improved our robot's performance during the season, and has helped other teams become more successful. What it has *not* done, however, is limit 319's competitiveness in any way. Team 319 firmly believes that its open concept is one of the keys to its success.

Section 3: Team Structure

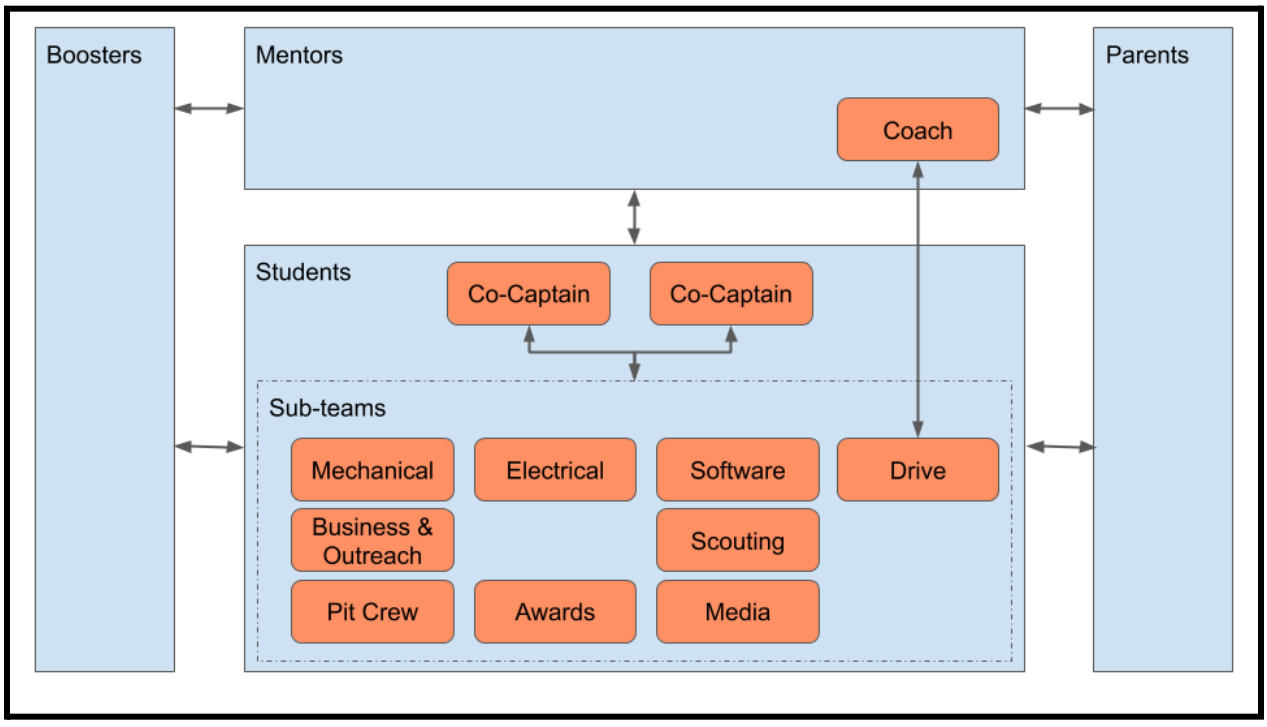
There are three major groups that make up Team 319; **students, mentors, and parents**. Students are the core of the team, and are the only team members that can drive the robot during competition. Mentors help facilitate and guide student activities within the team, as well as guiding the different sub teams throughout the year. Parents provide a crucial base of support throughout the year by helping staff events, providing food during meetings, and attending meetings as mentors.

Team 319 is organized into sub teams, which are described below. Each sub-team has a lead student that is chosen by the sub-team. Separate from the sub teams are two elected team co-captains. Mentors all play an equal part within the team, and advise the subteams. One mentor also has the role of coach, and coaches the drive team during competitions.

Team 319 is supported by a Booster Club, which handles Team 319's financials, long term planning, and asset management.

Organization Chart

The following Organization Chart highlights the identified leadership structure:



Students

Big Bad Bob is a student-led, mentor-guided team. While there are several “official” student leadership positions, there are ample opportunities for students to take leadership roles regardless of whether or not they have a “title”.

Captains

Team 319 has two team co-captains whose task is leading the entire team. They ensure that the team is on track to meet its goals, want to hear every student’s thoughts, facilitate team meetings and communications, and put extra effort into helping the team succeed.

Team captains are chosen by mentors in the fall via submitting their interest to the lead mentors. Any interested student may apply. For more details, see Choosing Student Leaders.

Mentors

Mentors are the invaluable professionals who volunteer hours upon hours of their time each year to the enduring success of the team. Our mentors are the guiding forces who stay with the team to teach, inspire, and empower students.

Mentors-by-Numbers

- 8 Current Mentors
    - 2 Lead Mentors
    - 3 Female Mentors
    - 3 Returning Alumnae of the Team
    - 2 Mechanical Mentors
    - 1 Original Mentor

Current Mentors

- Brian Hikel
    - 1999 - present
    - Mechanical, Strategy
- Michelle Kelley
    - 2013 - present
    - Awards, Business, Media
- Mike Kelley
    - 2013 - present
    - Mechanical
- Melissa Catauro
    - 2018 - present
    - Business, Media, Fundraising

- Eric Mercer
    - Student: 2012-2015; Mentor 2021-present
    - Programming
- Alexandra Berry
    - Student: 2014-2018; Mentor 2018 - present
    - Scouting
- Tim Guyer
    - Student 2014-2018; Mentor 2023
    - Programming
- Niko Neatherly
    - Student: 2015-2019; Mentor 2021-present
    - Mechanical, Design, Driver Coach, Strategy
- David Kelley
    - Student: 2015-2019; Mentor 2021-present
    - Mechanical

Mentor Expectations

- Be prompt and ready for action.
- Share your expertise.
- Let the students do the majority of the work.
- Be fair in all judgment calls.
- Equitably treat all team members.
- Help the students to achieve the goals of the team.
- Inspire and encourage the team when necessary.
- Be a guide on the side.

Sub Teams

FRC 319 is divided into sub teams: Mechanical, Electrical, Software, Business & Outreach, Drive Team, Strategy, Pit Crew, Awards, Media & Website, and Safety. Sub teams operate year round. Members can participate in one or more sub-team.

Below are brief descriptions of each sub-team. The **objective & importance** section describes why the sub-team exists. The **skills** section describes some of the skills that members on the sub-team will use on a regular basis. It's important to note that the skills listed are not requirements, and can be learned through participation in the sub-team. The **participants** section describes the criteria (if any) that must be met in order for a student to be eligible for that sub-team. The **typical tasks** section describes some of the things that students will do on the sub-team throughout the year.

Mechanical

Objective & Importance	Responsible for designing and fabricating the physical aspects of our team. Some examples are: • The robot and practice robot • Prototypes • Pit and shop improvements • Driver station
Skills (Learned & Used)	• CAD • CAM • Machine Tools • Hand Tools • Gearbox Design & Motor Selection
Participants	All members welcome
Typical Tasks	• Develop prototypes • Design robot subsystems in CAD • Machine robot parts • Analyze and fix robot failures • Design and implement improvements for pit • Order and inventory parts
Notes	Several members must be present during meetings

Electrical

Objective & Importance	Responsible for the design, implementation, and maintenance of the robot's electrical system.
Skills (Learned & Used)	• Motor controller selection • Understanding motors and their applications • Sensors • Wire management • Soldering
Participants	All members welcome
Typical Tasks	• Help allocate motors to subsystems • Help select sensors for subsystems • Wire robot • Manage robot batteries and chargers • Electrical troubleshooting

Notes	• Several members must be present during meetings • Joining a secondary sub-team is recommended

Software

Objective & Importance	Develops the control software for the robot.
Skills (Learned & Used)	• Java programming • Software development • Debugging • Testing Code • Control Theory • Signal Conditioning • Algorithms
Participants	All members welcome
Typical Tasks	• Learn how to program commands, methods, and subsystems in Java • Adapt with challenges as code malfunctions • Program an autonomous period for the robot that can be customized for field placement • Tune robot control loops • Accept feedback from mentors. • Document progress throughout the season
Notes	• At least one member of this subteam must be present at all meetings.

Business & Outreach

Objective & Importance	Plans and facilitates outreach events, helps to recruit new members, organizes fundraising activities.
Skills (Learned & Used)	• Project management • Public speaking • Marketing • Documentation • Recruitment • Personnel management

Participants	All members welcome
Typical Tasks	• Grant applications • Creating local business relationships • Sponsorship management • Plan, facilitate, and promote events
Notes	• Students can join the sub-team to work on one specific outreach event, or the entire year and help plan all of them.

Drive Team

Objective & Importance	Operates the robot during competition, works with other teams to develop an alliance strategy.
Skills (Learned & Used)	• Communication • Strategy • Negotiation • Operating under pressure • Quick thinking • Problem solving
Participants	A driver, operator, human player, and technician are selected for the competition season. All students are welcome to express interest.
Typical Tasks	• Practice driving and operating robot • Develop in-match strategies for the team • Develop in-match strategies for the alliance • Participate in scouting meetings
Notes	• Required to attend every official FRC event • Expected to practice driving the robot regularly • Expected to speak to the judges when in the pits

Strategy

Objective & Importance	Designs and manages a system to gather data and make strategic decisions during the competition.
Skills (Learned & Used)	• Strategic analysis • Data management • Data analysis • Communication • Organization

Participants	All members welcome
Typical Tasks	• Develop a scouting application • Gather accurate data during matches • Organize data and determine key metrics • Help determine match strategy • Help choose the best alliance possible
Notes	• It is important for each member to understand the rules of the game in order to provide good strategic advice.

Pit Crew

Objective & Importance	Ensures the robot is fully operational during competition.
Skills (Learned & Used)	• Fast thinking • Operating under pressure • Troubleshooting • Communication
Participants	All members are welcome. Members will be designated before each competition.
Typical Tasks	• Set up and tear down the pit • Maintain the organization of the pit • Mechanical repairs / upgrades to the robot • Electrical repairs / upgrades to the robot • Software repairs / upgrades to the robot
Notes	• Expected to talk to judges when in the pits

Safety

Objective & Importance	Develop and implement best practices that ensure the team operates in a safe manner.
Skills (Learned & Used)	• Risk management • Risk assessment • Documentation
Participants	All members welcome
Typical Tasks	• Educate team on safe practices in the shop and pits • Be aware of safety risks and mitigate where necessary • Monitor safety equipment and usage

Notes	• Know and communicate safety guideline expectations for pit areas at events

Awards

Objective & Importance	Communicate to the judges about our team's accomplishments and community involvement.
Skills (Learned & Used)	• Public speaking • Writing • Organization • Video editing • Presentations
Participants	All members welcome
Typical Tasks	• Create a presentation and present it to a panel of judges • Writing and editing an essay about the team • Designing a video version of the essay • Creating additional support material for use in the pits
Notes	• Understand the objective of the awards and the significance in winning them.

Media & Website

Objective & Importance	Manage Team 319's presence online.
Skills (Learned & Used)	• Website design and maintenance • Social media • Photography
Participants	All members welcome
Typical Tasks	• Document team activities with photo and video, at least once per hour at competitions • Year round weekly updates about team's activities • Team promo videos

	• Post pictures and videos on social media sites ie. Instagram, Facebook, Twitter • Maintain the Team 319 website

Section 3: Team Processes

New Student Recruitment

Eligible Students

All students of PMHS are eligible to be on the team.

Recruitment Activities

It is imperative that we recruit new students in order to keep the team sustainable. The team does this in many ways: mentoring FLL and FTC programs, demonstrating during back to school and step up nights, and community outreach events.

Choosing Student Leaders

Captains

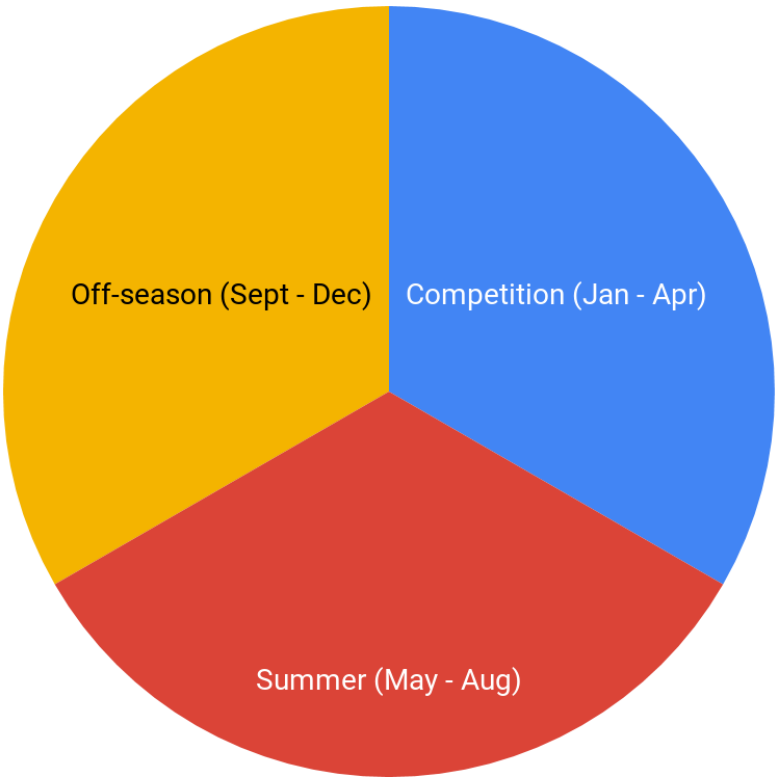
- Interested students submit their name for consideration to the lead mentors.
- The mentors will meet to make a decision based on all of the information gathered from previous leadership experience on the team and team meeting observations.

All other positions

- Students express interest in a position-or-are nominated for a position by a mentor or other student leader, and accept the nomination.
- The mentors discuss the position with the captains to get their input.
- The mentors meet to make a decision.
- If granted the position, either a mentor or a captain will communicate this to the student and to the team; otherwise, a mentor will inform the student and discuss with him/her what he/she can do to improve within the team.

Seasons

The year is split into three seasons based on the type of activities and the frequency of meetings. Below are descriptions of what occurs during those meetings. Please remember that students are not required to attend every single team function to be a member of Team 319, but should contact a mentor if they have any scheduling conflicts.



Off-Season

The Fall Season, from September until December, is the primary training season for Team 319. New members choose which sub teams they want to join and learn the skills they'll need to succeed in those sub teams. Returning members help teach new members and continue to improve their skills. The entire team participates in bonding exercises, big picture thinking and planning, and non sub-team specific skill building. We hold our main recruiting event, Battle of the Bay, to introduce potential members to our team. The fall is an excellent time for any student to rise as a leader, and build the skills necessary for the team to have a successful competition season.

Fall activities fall into three categories. The weekly meetings provide the primary structure for the fall, and include the whole team. Additional project meetings can be scheduled around individual sub-team or crew members personal schedules. Finally, the team is involved with several events that take us out of the build space and into the community.

Weekly meetings - Mondays and Wednesdays from 2:45 pm to 4:00pm, are the main focus of the fall season. Students will spend time in a large group at the beginning of the meetings to provide time for presentations or discussions requiring the entire group. Then the students meet with their primary sub teams, working on projects designed to improve skills.

Events - Various team events (competitions, fundraising, and outreach events) take place on various days in different locations throughout the fall season.

Typically the team travels to 4-5 off-season events. These include

- Mayhem in Merrimack- June or September - Merrimack, NH
- Battlecry -June - Worcester, MA
- Summer Heat - July - South Portland, ME
- Governor's Cup - October - Plymouth, NH
- Battle of the Bay - November - Alton, NH
- Beantown Blitz - July - Boston, MA
- Mainely Spirit - September - Falmouth, ME
- River Rage - October - Manchester, NH
- Indiana Robotics Invitational - July - Indianapolis, IN

Competition Season

The competition season is the 17 week period of time in which the team builds the robot and competes with it. Spanning from kickoff in January to the end of the World Championship in April. Kickoff is the official release of the year's game, featuring messages from sponsors and Dean Kamen himself, a fully constructed field, the official game manual, and a Youtube upload of the game animation. While we do have scheduled build hours, additional hours may be added or other changes to the schedule may be made based on the robot's progress.

Typical Build Hours:

Day of the Week	Hours
Monday	2:45 pm - 4 pm
Tuesday	Off
Wednesday	2:45 pm - 4 pm
Thursday	Off
Friday	2:45 pm - 4 pm
Saturday	9 am - 3 pm
Sunday	9 am - 2 pm

Why are our build hours the way they are?

Summer Season

From June - August, members can take on personal or small group projects if they so desire, as well as participate in outreach opportunities. Many students and mentors use these months to rest, take on small projects, and regroup with sponsorships for season recaps. The team also

competes in competitions with the previous year's game and also organizes several different outreach events.

There will be weekly meetings during the summer months for those who are available.

Registration

Students need to register through *FIRST*.
https://www.firstinspires.org/resource-library/youth-team-member-consent-and-release-form

FIRST registration is performed online and needs to be completed once per season before the student may attend any official FRC event (kick-off, district competitions). Instructions on registering with *FIRST* will be provided in the fall. Both student and parent actions are required to register with *FIRST*.

Section 4: Student Expectations

Behavior Expectations

Virtues

You are expected to exude a respectful, gracious professional attitude and practice Coopertition®, honesty, and integrity at all times. Your teammates, student leaders, and mentors deserve your respect, and you represent Team 319 and Prospect Mountain to others. All ideas are valuable and all people are acceptable on a *FIRST* team. Take the time to meet your fellow teammates and find friends.

Additionally, be respectful of others. Remember that your actions and words could offend others. This is a robotics team, not a dating service. This is not the place for public displays of affection or team gossip. Team gossip will not be tolerated.

Grades

Per PMHS extra-curricular guidelines, if you are on academic probation your eligibility may be curtailed.

As stated on page 2 of the Prospect Mountain High School Athletic Handbook

Academic Eligibility

A. Prospect Mountain High School academic eligibility rules are as follows:

    1. Students must have all passing grades from the previous marking quarter to be eligible for all extra-curricular activities. Any student who receives one failing grade will be placed on Academic Probation. Any student who receives more than one failing grade will be ineligible to participate in any extra-curricular activity for the upcoming marking period.

    2. The administration reserves the right to put students who are failing on Academic Probation at any time during the season.

    3. Academic Probation: A student on Academic Probation will be required to have a weekly progress report filled out by all of his or her teachers for the remainder of the quarter. While on probation, the student will be allowed to participate in all activities; however, if at any time during the quarter a student's weekly progress report indicates a failing grade in any course for two consecutive weeks, the student will be considered ineligible for the remainder of that quarter and removed from the extra-curricular activity.

On page 11, Attendance Regulations for sports also apply to robotics ('games and practices' as 'events', 'coaches' as 'mentors', and 'athletes' as 'teammates')

G. Attendance Regulations:

1. All students/athletes must attend school for a full day before, on, and after game days. Any student dismissed from school, due to an illness, may not return to participate in athletics for that day. Failure to adhere to this policy will result in non-participation in the next scheduled game.

2. All athletes are expected to attend all scheduled practices and games. It is very important to make arrangements with the coach for scheduling conflicts.

3. Exceptions to the above may be granted at the principal's discretion.

Personal Health

We love to see intense dedication to the team, but remember that your health is much more valuable than anything. Like all afterschool activities, students are not allowed to participate in a build night if you missed school that day. You should not attend robotics meetings if sick; you need to rest and recover properly so you can return at 100%.

Self-Motivation

Please remember that you are your own best advocate. No adult mentor or student leader can 'make' a student do something. This is a self-motivated program. If you want to learn, ask a mentor or captain. If you want to work, pick up a tool or ask a leader. We will make every effort to encourage involvement by all students, but in the end it's up to you. If you are not sure where you fit in or aren't sure what can be done, please talk to a mentor or captain

Phones/Distractions

We expect you to partake fully in team meetings and events, which means that you are not on your phones or laptops. Parents, please conduct necessary communications before or after meeting hours as much as possible.

Transportation

Students are expected to find their own transportation to and from meetings or may stay after school on weekdays until meetings begin. Students are expected to be dropped off at the woodshop classroom meeting (located at the back of the parking lot, behind the music wing), or to move vehicles to this location before the start of meetings. All students being picked up should meet their rides in this location after the meeting's conclusion. If a student is having problems finding transportation to or from meetings, we encourage you to reach out to other team members through the google platform for a ride.

Punctuality

When coming to team meetings, it is expected that you are on time or have communicated your late arrival to a mentor or captain. Meetings officially start at 2:45 pm after school, unless extracurricular activities have been canceled. Remember, 5 minutes early is on-time, and walking through the door at the meeting start time is late. You must also be prepared for team meetings, bringing any necessary materials, such as safety glasses or computers, with you. Safety glasses will be provided by the team.

Exploration

Please use your time on 319 to continually expand your horizons. Learn new things, meet new people, and try new experiences.

Commitment

Honor your word: If you commit to a project, see it through. If you are unable to complete the commitment, notify a mentor or captain within a reasonable time.

Safety Expectations

Safety Glasses: Safety glasses are mandatory in the shop, lab, and competition pits. The team will provide each student with a pair of safety glasses: You are responsible for the care and keeping track of your pair and bringing them to team functions. Failure to wear safety glasses will result in removal of the student from the shop, lab, or pits until the situation is remedied.

Horseplay: No horseplay will be allowed in the shop, lab, or pits. These workspaces must be used responsibly and machinery treated with respect. Failure to respect these spaces will result in the student being asked to leave the space.

Machinery: Machinery in the shop is to be respected and used responsibly. It is not to be used without an adult in the general vicinity, and certain machinery should be used with direct adult supervision. If a student is unfamiliar with certain machinery, they should ask a mentor for an explanation of how to use it. If a machine should malfunction or a student has problems using a machine, notify a mentor immediately.

The team has a training model set-up based on this progression:

Mentor does, Student watches
Mentor does, Student helps
Student does, Mentor helps
Student does, Mentor watches

While at a traveling competition, medications should be used per Prospect Mountain Field Trip Guidelines.

Dress Code

The team dress code must be followed at all times. Failure to comply may result in limited mobility at team meetings or competition.

General Dress Code

This code applies to attire worn to every team function:

- Closed toed shoes
- Long pants*
- Hair pulled back from face and above shoulder level (ponytail or bun)*
- Modest dress -- following Prospect Mountain guidelines
- No loose clothing (scarves, shawls, sweatshirt strings etc)*
- It is advisable to wear clothing that may get dirty*

*necessary for those working in the shop and lab -- advisable for all others

Event Dress Code

Generally worn to district events, championship events, off season events, and most open houses and sponsorship events:

- Team T-shirt
- Closed toed shoes
- Hair pulled back and above shoulders (if needed)
- Team sweatshirt (optional)
- Presentation attire (Chairman's team only)

Communication Expectations

It is your responsibility to stay up to date regarding team events. Between school emails, Google chat, the team's Google classroom, Google Drive, and the team Google Calendar, you have no excuse for ignorance of team functions. If you have any questions on these topics, please approach a mentor or captain.

Google Platform: Email, Chat, Classroom

The PMHS Google platform is our team's primary form of communication. Students are required to join the team's classroom (join code: oi6mv5t). Announcements, schedules, and information will be posted periodically. Please have the google gmail and google classroom apps download to your phone for easy access with notifications on. Keep in mind that Google is a team communication tool and not a chat service, you should not be communicating with other team members or mentors irresponsibly.

Students must have an active email address (provided by Prospect Mountain) that they check regularly. All emails received from the team should be opened and read thoroughly: Do not discard emails based on the subject line. It is suggested to have a folder for all robotics emails, making them quick and easy to locate. Additionally, if an email requests a response, respond promptly.

Google Drive

All team members will receive access to view the Google Drive folder "FRC 319" (Bob drive). This folder contains documents on a variety of topics. If you are making presentations or any type of document for the team, please share it with a mentor or captain, so they can add it to the appropriate folder. If you want to help with a project that requires editing access to the folders, talk to a mentor or captain. If Bob drive needs to be accessed using the Bob gmail account (instead of your own account), the information is as follows:

Email: Bigbadbob319@gmail.com

Password: *See one of our mentors*

Google Calendar

319 keeps a Google Calendar updated with all team functions. This calendar can be found on the website, and you are all highly encouraged to add it to your own personal calendar. The link to the team calendar can be found here: Calendar

BOB is present online in several different ways. You, your parents, and your friends are highly encouraged to follow the team's social media accounts.

Website: http://www.frc319.com/

Twitter: @FRC319

Facebook: https://www.facebook.com/319BigBadBob/

Instagram: https://www.instagram.com/bigbadbob319/

Youtube: https://www.youtube.com/user/BigBadBob319

Throughout the season, we want open communications between all students, captain(s), and mentors. If you have an idea, concern, feedback, thoughts, questions be sure to communicate them to a captain or mentor. We want to hear your voices, because you are the most important members of the team. Your captain(s) are very happy to talk to you at any time in the halls before or after school.

If a conflict should arise with a fellow team member, mentor, or captain, please speak to them and not about them to others. If you are feeling stuck or are unsure how to proceed, please talk to a mentor or captain for advice or help.

Competition Expectations

319 typically attends two or more off-season events, one Week 0 Event (last weekend of build season in February), and two or more District Events (Spring) each year. Upon qualifying, we likely would also attend New England District Championships and/or *FIRST* World Championships (both in late Spring). At all competitions, we expect the following behaviors from 319:

Phones

At competitions, the main source of communication is still through Google (Chat/Classroom/Email) on your phone. All students must have their charged* phone with them. If you do not have a phone, do not fear: you will be responsible for finding a "phone buddy" who will be in charge of making sure you know the latest. You may have multiple teammates and mentors to rely on for updates, as long as you are with one person at all times. While your phone is necessary for team communications, it may not be used for games or social media (as these activities drain batteries quickly), nor is it appropriate to hand your number out to every person you meet. Use it sparingly.

*If needed, bring a charger; USB power packs also work well at competitions! A dead phone isn't helpful.

Team Spirit

Your enthusiasm and love for your team should show at competition. Cheer loudly. Be optimistic about the future. Don't dwell on the negatives of the one bolt that came loose. Get up and dance in the stands. Competitions should be fun! Don't let a negative attitude ruin it for you and others. Keep in mind Gracious Professionalism as you will also be expected to treat other teams with equal respect and enthusiasm. Although we are competitors, we still shake hands, encourage other teams, and speak kindly to/of other people. (Plus, awards can be won for your spirit!)

Proactivity

Students will have jobs to do at competitions that help the team compete at a higher level. Which jobs you receive depends on what you did and how actively you participated during the Build Season on your sub team(s) and crew(s). When you do not have a specific job that needs attending to, you should be proactive about learning more. You should either be in the pits talking with other teams, attending seminars, or in the stands, actively scouting matches and cheering.

Virtues

Competition is not the time to throw the virtues of Gracious Professionalism and Coopertition® out the window. It is the time to practice them ever more fully, especially when the stakes and tensions are high. Rude behavior towards teammates, mentors, other teams, volunteers, and visitors will not be tolerated.

Uniform

Our team has a very recognizable brand, and it is crucial that you support this brand at competitions by wearing your team uniform as outlined by the dress code. If you are missing a shirt, please notify a mentor prior to the competition so you can be prepared for the competition!

Safety

For safety reasons, you should always be with another teammate or group of teammates. At the very least, another student or mentor needs to know where you are going. You should also have the mentors' phone numbers in case of emergency. Only ride in transportation provided by 319. Always listen to the mentors.

When in the pits, safety glasses are mandatory. Anyone not wearing safety glasses when in the pits will be sent to find some. The safety captain bears the responsibility of ensuring this policy.

Sleeping

Competition days can be very long and tiring, so it is crucial that you get enough sleep at night. This is typically more difficult during our traveling competitions due to the allure of staying up late and talking. Team bonding is good, but you must get enough sleep so that you won't fall asleep the next day at competition. Sleeping in the pits and stands isn't acceptable.

Team Pride

While it is always encouraged that you should be making friends while at competitions and from other teams, when we're on the field, you should be sitting with your team. Your role on the team comes before any socializing; keep in mind that this isn't a dating service.

Travel Eligibility/Expectations

Traveling with the team to competitions is one of the most fun experiences of the season. To be eligible to travel you must have met the following requirements during the build season:

- Meaningful attendance to meetings (mentor discretion)
- *FIRST* registration completed
- Understanding of the team's mission and goals
- Maintaining passing grades and school attendance
- Signed Parent/Guardian permission for all teammates under the age of 18 or student if 18 or older.
- Reading the handbook and passing the quiz.

Traveling Etiquette

Before Leaving For Event:

- Smile, Breath, & S L O W D O W N!
- Establish an agreed upon set of etiquette for those riding in vehicles.
    - Be mindful of your hygiene and apply deodorant
    - Communicate with drivers/mentors of any important
    - Ride in same vehicle you rode to an event in (Unless told differently by a mentor)
    - Think before you speak (no unnecessary comments) and use appropriate language
    - Use the restroom before you leave
    - Help load and upload trailer when leaving and arriving at events

During Car Ride:

- Listen to the driver when they give instructions
- Be mindful of noise level when talking
- Use headphones when using electronic devices
- If you must take a call please talk in a calm tone and keep off speakerphone
- Please don't wake others if they are sleeping (unless snoring becomes unbearable)
- Don't spray things when you're in the vehicle (no aerosol sprays)
- Communicate with drivers/mentors if you need something (restroom break/feeling ill/windows)
- Be respectful when eating and drinking (no loud chewing or slurping)
- Keep hands to yourself
- Don't antagonize the driver or other riders
- Specifically on our way home from an event: call your ride/guardians with your ETA back to the school
- Think before you speak (no unnecessary comments) and use appropriate language **(no backseat driving)**
- Smile, Breath, & S L O W D O W N!
- Clean out any trash from the vehicle

- Wake up any sleeping riders, respectfully

Hotel/Meal Etiquette

While in the hotel:

- No running in the hallways
- Use respectful inside voices when in your room and traveling in hallways *(walk)*
- Keep your hands to yourself
- CLEAN UP AFTER YOURSELF, both in your room when you leave and in the dining areas
- ***No opposite sex in your room***
- When you are told it is lights out, lights are out; when you are told to be down to breakfast, you are coming down to breakfast
    - We give this directive for a reason. Competitions are long and stressful days, and you need to be well rested for the following day
- Clean up after yourself and leave the room better than you found it. (We have been recognized for being a clean and respectable team.)

When at mealtimes (breakfast, lunch, dinner):

- Be there at the time instructed, or shortly before, not too late or too early
    - (A minute or two early is acceptable), as this can be interfering for those setting up
    - ***At venue: drive team eats first***
- Thank those that are responsible for your meals
    - Offer to help clean or pack where/when possible
    - Help bring/carry food to where Mrs. Kelley needs it when we arrive at the hotel and at the venue.

Benefits of Being on 319

Being a part of 319 is an incredibly rewarding experience, providing students with lifelong skills, opportunities to win prestigious awards, material to be used in portfolios and resumes, and access to a multitude of college scholarships.

While some of the skills students learn are highly specific, many others are crucial to success in any field. Students learn skills such as problem solving, creative thinking, communications, self confidence, leadership, empathy, time management, and more.

Students' experience on 319 provides fantastic material for college essays and applications. In general, colleges, and military recruiters like seeing *FIRST* in a student's application because they understand that graduates of the *FIRST* program have lots of desirable skills and a great future ahead of them. Also, the writing components of the lettering submission can be compiled to form a portfolio of the amazing things accomplished in high school.

There are several million dollars in college scholarships available only to *FIRST* participants. These range from one time scholarships to multi-year scholarships, and about 35% can be used for any course of study. Students are encouraged to apply, apply, apply. See the FIRST Website for more information.

Sophomores and Juniors are eligible to be nominated for the *FIRST* Dean's List Award, an award that celebrates students who go far above and beyond basic expectations, advancing *FIRST*'s mission and values on their teams and in their communities. Students are nominated by their team's mentors, and each regional awards two nominees with the Finalist award. The finalists are then in the running to be an international Dean's List Award Winner, of which only 10 are picked each year.

Parental Expectations

Parents are a critical part of the team! In addition to providing transportation for students that cannot yet drive, parents are encouraged to get involved in the following ways:

1. Google Classroom. Parents can be invited to the google classroom and receive a weekly digest of announcements from the week and receive emails from the mentors as needed.
2. Saturday lunches during the build season. Parents will be asked to sign up to bring/support lunches during the build season through a signup genius link.
3. Building field elements. Most years the team requires field elements from the game in order to design and test the robot. If you are interested in volunteering to help build these elements for the team, please let us know. Official drawings for field elements (listing dimensions, materials, and assembly instructions) are provided by *FIRST* at kickoff each year.

4. Become a mentor! The team wouldn't exist without a robust crew of mentors, and interested parents are more than welcome to join us. Mentoring takes on many shapes and sizes, and the time commitment can be tailored to the task at hand. For example, helping the team with grant writing or presentation skills may be a smaller commitment than helping with the robot construction.

5. Support the team at competitions! From cheering in the stands to volunteering on the field or in the pits, the team and *FIRST* needs as much support as possible to make our competitions a success. If you're available during one of the events, please ask a mentor how you can get involved!

6. Join the Boosters A 501(c)3 organization of dedicated parents of students and alumni. Its main function is to develop support for the student program and raise and maintain funds for supplies or equipment that the students may need.

Things to Think About

Travel Basics

As a team, there are many competitions that we will travel to that are lengthy trips, such as District Champs and Worlds. It is important to keep in mind that you are going to be in close quarters with a lot of people. Please be considerate and recall basic hygiene to make these trips as painless as possible for the people around you. Also, for longer trips in particular, there will be very few stops, mostly only to get gas and use the bathroom, so it's recommended that you bring snacks to take with you along the way.

Trading

While at competitions, it is extremely common to see other teams with trading pins and/or bracelets. We encourage this sort of camaraderie. Another trading that is common, especially if you're going out of state, is t-shirt trading. It is highly recommended that you save money to purchase the basic BOB shirts to trade at these events, where you might see teams from states or countries that you'll rarely see again, or trade with teams that you admire.

Handbook Quiz

Upon the completion of reading this handbook, please take the handbook quiz here.

Handbook Acknowledgment Form

Please print this page and hand it to a team mentor after signing.

I have received the handbook and I understand that it is my responsibility to read, understand, and comply with the policies contained in this handbook and any revisions made to it.

Team Member (Print)

Team Member (Sign)

Date

Appendix

Event History

Year	Event	Results
1999	Philadelphia Alliance Regional	
2000	Philadelphia Alliance Regional	
2001	Long Island Regional	
2002	UTC New England Regional	
2003	BAE SYSTEMS Granite State Regional	
2004	BAE SYSTEMS Granite State Regional	
	Lone Star Regional	• Leadership in Control Award
2005	BAE SYSTEMS Granite State Regional	
2006	BAE SYSTEMS Granite State Regional	• Regional Finalists
2007	BAE SYSTEMS Granite State Regional	
2008	BAE SYSTEMS Granite State Regional	
	Battlecry@WPI 9	
2009	BAE SYSTEMS Granite State Regional	
2010	BAE SYSTEMS Granite State Regional	
2011	BAE SYSTEMS Granite State Regional	
2012	BAE SYSTEMS Granite State Regional	• Innovation in Control Award

	Battlecry@WPI 13	
2013	BAE SYSTEMS Granite State Regional	
	Pine Tree Regional	
2014	NE District - UNH Event	• Creativity Award
	NE District - Pine Tree Event	
	New England District Championship	
	World Championship (Archimedes)	
	BattleCry@WPI 15	
	Battle Of the Bay 1	
2015	NE District - Reading Event	• District Event Finalist • Innovation in Control Award
	NE District - UNH Event	• Gracious Professionalism Award
	New England District Championship	• Volunteer of the Year (Ty Tremblay)
	World Championship (Tesla)	
	BattleCry@WPI 16	
	Mainely Spirit	
	Battle Of the Bay 2	
2016	Week 0	
	NE District - North Shore Event	• District Event Winner
	NE District - UNH Event	• District Event Winner
	NE District - Pine Tree Event	
	New England District Championship	
	World Championship (Carson)	
	BattleCry@WPI 17	
	Mayhem in Merrimack	
	Summer Heat	
	Mainely Spirit	

	RiverRage 20	
	Battle Of the Bay 3	
2017	Week 0	
	NE District - Granite State Event	
	NE District - North Shore Event	
	BattleCry@WPI 18	• Winner
	Mayhem in Merrimack	
	Summer Heat	
	Mainely Spirit	
	RiverRage 21	
	Battle Of the Bay 4	
2018	Week 0	
	Central New York Regional	• Regional Finalists • Wildcard
	NE District - North Shore Event	• District Engineering Inspiration Award • District Event Winner
	NE District - UNH Event	• District Event Winner • Industrial Design Award sponsored by General Motors
	New England District Championship	• District Championship Winner • Quality Award sponsored by Motorola Solutions Foundation
	World Championship (Tesla)	
	BattleCry@WPI 19	• Winner
	Mayhem in Merrimack	
	Governor's Cup	• Winner
	RiverRage 20	
	Battle Of the Bay 5	

2019	Hatboro-Horsham District	
	Southern NH District	• District Winner • Creativity Award
	UNH District	• District Finalist • Innovation in Control Award
	NE District Championship	• Industrial Design Award
	Detroit World Championship (Daly)	• Excellence in Engineering (Daly Division)
	Mayhem in Merrimack	
	Summer Heat	
	Indiana Robotics Invitational (IRI)	
	RiverRage 21	
	Governor's Cup	• Finalist
	Battle Of the Bay 6	
2020	NE District - Granite State District (*shortened season due to pandemic*)	• Ranked 14th and semi-finalists
2021	Game Design Challenge participant (The Game Design Challenge was an opportunity for teams to design a *FIRST* Robotics Competition game and compete against other teams for a chance to pitch their game to the *FIRST* Robotics Competition Game Design Team.) (*virtual season due to pandemic*)	
2022	North Shore District	• Ranked 14th and won the Team Spirit Award
	Pease ANG District	• Ranked 19th and won the Team Spirit Award
	New England District Championship	• Ranked 5th and won the Team Spirit Award

Additional Sub-Team Info

Awards (FIRST Impact)

- **Objective & Importance**: (1) Creating the *FIRST* Impact award, which includes written content, video content, and a presentation (2) Maintaining judge, tech and pit binders.
- **Skills**: Time-management, writing, videography, presenting
- **Active Seasons**: Year round; most active in fall and winter
- **Participants**: Presentation will consist of three students who are strong in writing and speaking, and one or two students that are strong in videography. The presenting crew will continue practicing through the build and competition seasons, and must attend district competitions and championships. These students must attend regularly scheduled team meetings in the fall and winter.
- **Notes:** The *FIRST* Impact Award, the most important and prestigious award in FRC, honors the team that best represents a model for other teams to emulate and best embodies the purpose and goals of *FIRST*.
- **Typical Tasks:** (1) Reviewing the entirety of 319's history to get a sense of how the team has grown. (2)

Pit Presentation/Judging

- **Objectives:** (1) Presenting our team, our outreach, and our robot from the pit to judges, other teams, and visitors. (2) Ensuring that the team has all the presentation materials it requires at competition (e.g. binders). (3) Helping to train the rest of the team (specifically pit crew and drive team) basics on how and what to present in the pit.
- **Importance:** Speaking intelligently gives a better impression to judges and people who are unfamiliar with *FIRST* or Team 319, thereby increasing our chances of creating an impact or winning an award.
- **Skills**: Answering questions concisely and memorably, good presentation techniques
- **Active Seasons**: Most active during competition season, but may begin practice before then
- **Participants**: Open to all students, including awards team members
- **Notes**: Students will be on a rotating schedule in the pit throughout the competition
- **Typical Tasks:** (1) Being knowledgeable about every aspect of the team to answer any question brought forth by pit judges. (2) Ensuring that the technical and chairmans booklet are accessible to everyone. (3) Engage other teams' members and visitors when they visit the pit. (4) Think quickly to respond to any question.

Student Event Packing List

Keep in mind that this is a school sponsored event. You need to be dressed appropriately as you would be for school.

In your overnight bag, you should pack:

- ☐ BOB sweatshirt, if you're not already wearing it upon dismissal
- ☐ BOB shirt (Clean)
    - ☐ 1 for each day of competition (plus BOB gear for load in day) *If you need help affording shirts, sweatshirts, other BOB gear, we can arrange assistance*
        - ☐ If you want to wear a flannel, or an overshirt, make sure that it follows the BOB color scheme (BOB is a brand that is recognized by many. You are here in support of that brand, so please do so accordingly.)
        - ☐ If you are wearing a hat, it needs to be a BOB or PMHS branded hat (wearing a hood during the event is not appropriate)
- ☐ Pants/Jeans (A clean pair for every day of competition. Cargo shorts also acceptable)
- ☐ Belt (if needed)
- ☐ Pajamas/Sleepwear
- ☐ If you have any dental related items (mouth guard, bands for braces, etc.), pack them
- ☐ Undergarments and Socks (a clean pair for every day of competition)
- ☐ A bag to put your dirty clothes into so they're not mixed with your clean clothes (recommended)
- ☐ Toiletries kit
    - ☐ Toothbrush
    - ☐ Toothpaste
    - ☐ Floss
    - ☐ Hairbrush/Comb & hair elastic (for long hair)
    - ☐ Shampoo/Conditioner
    - ☐ Soap/body wash
    - ☐ Deodorant
    - ☐ Optional: shaving kits/cosmetics/face cleaning supplies/chapstick
    - ☐ Females: sanitary feminine hygiene products that you may need
- ☐ You need to be wearing, or have packed, a pair of [comfortable] closed toe shoes to wear at the venue (walking through pits; Crocs, unfortunately, do not count.)
- ☐ If shirt trading, you will want to pack extra BOB shirts (NOT ones you will need to be wearing while at the event). If you need to purchase generic BOB shirts for this purpose, please let a mentor know

In your stands/travel bag, you should pack:
(This is if you choose to have a bag with you, but starred (*) items are strongly recommended/needed at the event)

- ☐ Any snacks you wish to have with you for travel/while in the stands (Yes. You can bring your own snacks.)

- ☐ ***Chargers/charging blocks/charging cords for devices
- ☐ ***<u>Reusable water bottle</u>**
- ☐ If you are going to be pin collecting, it might be worth it to have a small, separate bag (ziploc) to put them in so they don't get lost
- ☐ ***Wallet
    - ☐ Make sure you have cash/card for any concessions you choose to buy, but ***most importantly for the dinner stop on the way home from the event***
    - ☐ Driver's license, for those driving, or a school ID
- ☐ ***Phone (***with parent/emergency contact info saved***)
- ☐ ***Hand sanitizer
- ☐ ***Safety glasses, if they are not provided to you from the container in the pit
- ☐ * A strap to hang them from your neck when not in the pits