

FIRST ROBOTICS COMPETITION TEAM 1923



2017- 2018

STUDENT/PARENT HANDBOOK

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Section 1: Introduction to Robotics

1.1 *What is FIRST?*

FIRST was started in 1989 by inventor Dean Kamen. The FIRST (For Inspiration and Recognition of Science and Technology) programs aim to create passion for science and technology in students. The FIRST program encourages Gracious Professionalism and “coopertition”, sportsmanship amongst teams even in the face of competition. Through FIRST, students build technical skills, and foster teamwork and leadership skills.

FIRST has grown into four divisions: FIRST LEGO League Jr. (FLL Jr.), FIRST LEGO League (FLL), FIRST Tech Challenge (FTC), and the FIRST Robotics Competition (FRC). The MidKnight Inventors participate in FRC, and host FTC, and FLL competitions as well as showcase events for Jr.FLL teams. The MidKnight Inventors directly mentor two FTC teams, 11 FLL teams, and 3 FLL Jr. teams. You can also find The MidKnight Inventors helping with other community and local Jr.FLL, FLL, FTC and FRC teams.

Starting in January, FRC students and mentors work together over 6 weeks to design and construct a competitive robot to meet the season’s challenge. In the 2017 season’s challenge, FIRST Steamworks, teams of three robots had to pick up and manipulate gears and ‘fuel’ (wiffle balls) to score onto an ‘airship’ to demonstrate robot efficiency and skill while sticking to the steampunk theme. Robots were also required to climb a rope at the last minute to increase their final score and win the match. In addition to building a robot, students learn to spread their passion for science and technology in our community, raise funds to support building the robot, and manage a budget. FRC caters to a variety of interests: computer science, engineering, physics, math, graphic/video artistry, business, communications, and writing. No matter where your interests are, there is something waiting for you on our team!

For more information on FIRST, please visit www.firstinspires.org or The MidKnight Inventors website, www.firstrobotics1923.org

1.2 About The MidKnight Inventors

Team 1923: The MidKnight Inventors was established in the fall of 2005. The team was started by a small group of students at WW-P High School North, but expanded in 2009 to include students from High School South as well. Today, the team is the largest activity in the district, with over 120 members representing both high schools in the West Windsor-Plainsboro Regional School District, as well as a large family of other FIRST programs for grades K-8.

Over the past few years, the team has greatly increased the awareness of FIRST programs throughout the community with various outreach events. We have participated in events such as Plainsboro Founders' Day, Girl Scout and Boy Scout fairs, and demonstrated our robots for all ages throughout the year. We also host our own FRC postseason competition, MidKnight Mayhem, an FLL qualifying competition, and numerous scrimmages for FLL and FTC teams in the area. The team has also expanded its outreach internationally, with presentations in India and Switzerland, as well as robotics classes in Africa. In 2014 we were able to establish and fund a FLL team in Hyderabad, India, which we mentored via internet meetings and video calls. This year we have added a team in China, which is mentored by a MidKnight Inventor alum.

The MidKnight Inventors recruit students from both high schools but our Engineering Lab is located in Room 308 at High School North. This space was given to us by the school district and is meant to be a collaborative space where our FIRST teams work together to grow STEM alongside the WW-P curriculum. Team meetings are typically also held at HSN in the Dining Halls, but due to room restrictions and other events, may also be held at HSS or another WW-P school venue.

Team 1923 The MidKnight Inventors: Awards and Achievements

2009	Winner, New Jersey Regional
2009	Judges' Award, Philadelphia Regional
2009	Galileo Division Quarterfinalist, FIRST Championship
2010	Engineering Inspiration Award, Boston Regional
2011	Dean's List Finalist, New Jersey Regional: Krishna Yarabarla '11
2011	Winner, Connecticut Regional
2011	Gracious Professionalism Award, Connecticut Regional
2011	Coopertition Award, Connecticut Regional
2011	Participant, FIRST Championship
2012	Engineering Inspiration Award, Hatboro-Horsham District Competition
2012	Team Spirit Award, Mt. Olive District Competition
2013	Participant, FIRST Championship
2014	Creativity Award, Mt. Olive District Competition
2014	World Championship Dean's List Winner: Michael Foley '15
2015	Judges' Award, Mt. Olive District Competition
2015	Woodie Flowers Finalist Award, NY Tech Valley Regional: Libby Kamen
2015	Engineering Inspiration Award, NY Tech Valley Regional
2015	Chairman's Award, North Brunswick District Competition
2015	Dean's List Finalist, Mid-Atlantic Region Championship: Rohan Chatterjee '16
2015	Curie Division Winner, FIRST Championship
2015	World Championship Semi-Finalist
2016	Chairman's Award, Mt. Olive District Competition
2016	Entrepreneurship Award, Montgomery District Competition
2016	Chairman's Award, Mid-Atlantic Region Championship
2016	Archimedes Division Quarterfinalists, FIRST Championship
2017	Winner, Mt. Olive District Competition
2017	Winner, Montgomery District Competition

The MidKnight Inventors have also found success at off-season competitions, hosted locally by teams in our area. Off-season events do not count towards our regulation FIRST season history, but are certainly great accomplishments (and trophies) for the team.

Section 2: Team Structure and Procedures

2.1 Mentors

Mentors are adult volunteers who donate a great deal of their time and effort to help students on Team 1923. Mentors assist with team organization, technical support, and support students in all aspects of running an effective team. Being a FIRST Mentor requires dedication and a significant time commitment. Our team's mentors work extensively with team members during the build season, designing, building, and fabricating a functional robot for Competition. Their expertise is the catalyst for the team's and students' success.

Mentors engage and inspire students in ways far beyond science and technology. They enable both students and adults to appreciate the value of sportsmanship, teamwork, and Gracious Professionalism®.

2017-2018 Team Advisor: Kathy Rogers, PhD.

Current Mentors

Samuel Becker	Mechanical, CAD
Louis Brottman, M.Accy	Finance, Outreach
Eric Drost	Strategy, Mechanical, Design, Awards, CAD
Jeff Drost	Mechanical, Design, CAD
Sarath Jaladi	Strategy, Mechanical, Design, CAD
Libby Kamen	Strategy, Mechanical, Design, Media/PR, Awards
Ruth Kamen	Media/PR. Awards
Randy Slemmon, PhD	Mechanical, Design

Please note that additional mentors will be invited to the team as necessary to assist with robot build and team administrative functions. All mentors have background checks and are fingerprinted as school district volunteers.

The MidKnight Inventors are also supported by an active parents' group. We always welcome parents and other community members who want to support and help the team in any way, big or small. Please see further information on Parent Involvement below.

2.2 Team Captains and Sub-Team Leaders

Team 1923 is currently composed of 5 Captains representing both high schools. The team is arranged into sub-teams under each captain, who is then responsible for a select part of the team:

Robot Branch

- 2 Build Captains — All major decisions come back up through directorship structure
 - 3 Build Directors: *Robot design and build, order lists, build group leadership, CAD to CAM*
 - 1 Robot Documentation Director: *All robot documentation, online presence (Chief Delphi, Discord), technical awards*
 - 1 CAD Director: *Robot design and strategy (heavy integration with build and strategy directors), 3D printing, revisions*
 - 1 Research & Development Director: *Machinery & shop documentation, maintenance, and setup, as well as research & recommendation on new equipment.*
 - 2 Strategy Directors: *Game analysis, robot priority lists, strategic design, competition strategy*
- 1 Programming Captain — All major decisions come back up through directorship structure
 - 2 Programming Directors: *Robot code, priority list with sensors, Java classes*
 - 2 Electrical Directors: *Electrical board and design integration, sensors, batteries, order lists*

Sustainability Branch

- 1 Outreach Captain — All major decisions come back up through directorship structure
 - 2 Outreach Directors: *Organize and run outreach events, outreach brochure, team spirit at competition*
 - 1 Media Director: *Printed magazine and business plan, chairman's video, website entries*
 - 2 Awards Directors: *Online chairman's essay and executive summary, entrepreneurship submission, Woodie Flowers Award*
- 1 Finance Captain — All major decisions come back up through directorship structure
 - 2 Sponsor Relations Directors: *Find and reach out to potential sponsors, assist with writing grants, maintain sponsor relationships*
 - 1 Fundraising Director: *Run local school fundraisers, organize food donations and sales at events, sponsor booklets*

Each sub-team has a Director that works with the Captain(s) and is responsible for the success of that sub-team. All directors are expected to show a great deal of commitment to the team and the FIRST goals. Directors will help guide the students in each sub-team towards their goals, and work to help keep them motivated. Captains will oversee the team's activities as a whole, and will be responsible for working to help keep every member motivated and managing their line's Directors. Full documentation on each role's responsibilities is available in a separate document.

It should be emphasized that being a leader requires a high level of commitment, both in responsibility and time. Those who are unwilling to make such a commitment should not apply for a leadership

position. Leaders are held to a high standard and must serve as role models to other students. Again, students who seek leadership only to enhance their resume need not apply.

To be eligible for leadership, students must have completed at least two (2) of the following in the previous season:

- Attended at least two (2) regional, district, championship competitions.
- Participated in at least 75% of team build sessions and team meetings during school season.
- Active participation (beyond the standard) in Fundraising and Outreach events
- Have written/co-written for our media team, website, or for FIRST awards.

Leadership on The MidKnight Inventors is an intense commitment, and your team will hold you to a high standard.

Once selected, here's what is required for all leaders within the structure:

- 80% minimum attendance to all leaders' meetings, including summer sessions
- 75% minimum attendance to team meetings, including build season
- Engagement with subteams in the opposite branch (e.g. involvement with a non-technical subteam as a Build Director, involvement with a technical subteam as an Awards Director)
- Competition Attendance: All roles must be represented by at least one of their leaders at events.
- Communication with other leaders, the Advisor and mentors. No work happens in a vacuum!

If during the course of the season, it becomes apparent that a leader is unable or does not wish to fulfill his/her role, the advisor, in conjunction with mentors may decide to replace the current leader with a student who meets the leadership criteria and has shown interest and commitment in a particular area.

2.3. Selecting a Sub-Team

If there is a particular sub-team you are interested in, you may ask the sub-team's leader on how to join or help. Keep in mind that if you are listed as part of one sub-team, you always have the opportunity to assist and take part in other sub-teams. All students will be assigned to one or more sub-teams based on their interests as well as needs of the sub-team.

Each fall the Leaders, Co-captains and Mentors conduct MidKnightU, a series of workshops and an orientation program describing what each sub-team is responsible for during the year. Captains, Sub-Team Leaders and mentors are happy to give any information beyond the orientation about the sub-teams. Attendance for MidKnightU is mandatory to be considered a part of the team. More than two absences will disqualify you from travel.

The main sub-teams of The MidKnight Inventors are defined as follows:

Mechanical: Responsible for all the mechanical components of the robot. Example tasks include: prototyping potential robot designs, interpreting CAD drawings to build the drive train and various manipulators on the robot, repairing the robot, working with power tools to complete tasks, and helping with the Engineering Notebook entries.

Electrical: Responsible for all the electrical components of the robot. Example tasks include: planning out the electrical board layout in CAD, wiring all necessary electrical components to power and signal, working with sensors and cameras, as well as communicating effectively with the Mechanical, Programming, and CAD subteams.

Programming: Responsible for the software of the robot through Team 1923's Github Account. Example tasks include: programming the different components (controls, motors, actuators, etc.) of the robot, programming visual detection methods, and updating computers with most recent software updates.

Business: Responsible for overall finances of the team. Example tasks include: fundraising for the team's overall budget, keeping track of income/expenditures, presenting to potential sponsors, brainstorming new fundraising ideas.

Community Outreach: Responsible for promoting STEM in the community and documenting our events and programs. Example tasks include: presenting and explaining the FIRST program and values at community events, preparing for the prestigious Chairman's Award (The highest award given in FIRST), writing award submissions, and creating graphics and videos for team presentations.

CAD (Computer Aided Design): Responsible for working with Mechanical & Strategy team on creating computer renderings of the robot, design prototypes, or other ideas that may need a model to work from.

Strategy: Works on both the strategic portions of the robot design process, as well as at-competition match strategy and scouting of other teams' robots. This subteam is fast-paced and helps determine a great deal of our competitive success. **Strategy:** Responsible for the robot's overall strategy and forming useful alliances at competition. Example tasks include: discussing priorities and the priority list at kickoff, scouting robots at competition, discussing benefits and drawbacks of other robots at competition, and selecting an alliance partner.

Media/PR: Responsible for the branding and messaging put out by the team – on our website, Facebook, Twitter, Chief Delphi, etc. Also works on the team's uniform, pit, and giveaways, maintaining a consistent look for the team across all places.

No prior experience is needed to join any of these sub-teams! Leaders and captains will host numerous workshops throughout the year to teach the skills needed for each sub team.

2.4 Robot Design Process

This quick at-a-glance view of the build season will allow students to obtain a better understanding of how our team works through the season, but is not a complete guide – mentors & student leaders will continue to define and re-work our objectives per week as the season progresses. A design/progress review will be held weekly to determine what we need to meet the goals we set during the early days of the build. During this review, we also evaluate changes that may need to be made to fit the priority list.

The robot design process starts immediately during the FIRST Kickoff event on January 6, 2018. Once the game is announced at Kickoff, the full team meets to interpret the game and discuss various strategies. By the end of this day, the goal is to have decided on a basic game play strategy (what type of robot it will be; defensive, offensive, both, etc.) for the season and to provide a list of essential robot qualities that we will design for later. This list will be referred to as the Priority List throughout the season. Students are then required to thoroughly read and learn the rules of the new game over the first few days of the game reveal. Reading the rules ensures a competition-legal robot and results in game-winning strategies.

Kickoff: After everyone has read the rules of the game we analyze the game and start to discuss strategy, concepts, and design solutions. It is essential to the design process that we analyze the game and fully understand the scoring system before designing our robot. CAD (Computer Aided Design) and Strategy are critical subteams during this and the next few stages of the season, for conveying ideas and designing parts and prototypes for the robot.

Week One: Planning & Prototyping. The team starts the week by finalizing and defining our list of season priorities and the overall strategy of our robot's design. Once a finalized priority list is generated, prototype designs will be discussed and proof of concept designs will be built. Strict time goals will be set during this period for each major aspect of the robot. CAD models of the drivetrain will be completed by the end of week one.

Week Two: CAD & Initial Manufacturing. After deciding on the most effective design through our prototypes, this week is spent perfecting the chosen design and creating parts. CAD helps us to convey ideas and visualize any problems that may occur throughout the season. Drive base construction is usually completed during this week. This week's Design Review will focus on adjusting any time goals as necessary.

Week Three: Critical Design Review. During this week's session, we reflect on our design and build schedule to see if we are on target with our schedule. During this time we may eliminate components deemed unnecessary or too difficult to produce. Moving forward, we iterate on the concepts we have that work, and eliminate those that don't.

Weeks Four- Six: Iteration & Completion. As we approach the end of build season, we continue reiterating these designs and start practicing for competition. During this period, manipulators, bumpers, and aesthetic additions must be completed. Miscellaneous final robot tasks such as wiring cleanup & sponsor acknowledgement will occur and spares must be produced.

Competition Season: Building of the robot does not stop after the build season. Improvements and calibrations are also made before, between, and during competitions. New prototypes may be constructed and tested based off successful designs seen at competition. Spare parts must be manufactured and general robot maintenance will occur.

2.5 Other Decision Making

Students, parents and mentors should understand that while this is a learning environment, that we are also a competitive team and that not every idea, design, or thought by a student/mentor/parent may be realized. The team will listen and respect all ideas presented, but not all will be put into practice.

Based on time and funding constraints, as well as the dynamics of the challenge, some decisions may have to be made by the leaders & mentors since the team has only six weeks to build a robot that successfully plays the game!

At all times, the Advisor and Mentors are responsible for ensuring that all decisions (including but not limited to: robot design, student participation levels, work group makeup) are made in the best interest in the majority of students and the team as a whole. These decisions are made only to benefit the team and will be reflected in the Engineering Notebook kept by the build captains and directors.

2.6 Expenditures

We must adhere to our team's planned and approved budget.

Before a mentor or student makes a purchase on behalf of the team, the purchase must be approved by a Mentor and then by the Advisor. Please contact the Team Advisor for more details on the purchasing and reimbursement procedure including information pertaining to tax-exempt forms. (Since we are a school organization, we do not pay NJ Sales Tax on purchases).

The finances of the team are handled through WW-P High School North, and as an official school team, we must follow district procedures.

PLEASE NOTE: The team will not reimburse items ordered or paid for without following this procedure. Please make sure the expense has been approved before making any team purchases.

2.7 Competition Drive Team

The competition drive team is made up of four positions as outlined below:

- Driver: The Driver is responsible for driving the robot on the game field.
- Operator: The Operator is responsible for controlling manipulators on the robot.
- Human Player: The human Player is responsible for retrieving and returning game elements through mechanisms provided by game field. The exact role is modified every year according to the game rules.
- Coach: The coach, an adult mentor, is responsible for being the “eyes of the match” and directing the driver, operator, and human player through an adaptive strategy all while monitoring the time, the score, and the actions of other robots.

The Competition Drive Team is selected through the following process: Veteran team members who wish to be on the drive team must show their interest by attending off-season events with the team. The team uses qualification matches at some of these events to do a preliminary screening for students on the team who want to demonstrate their skills for any drive team position. The mentors also take into consideration the student’s potential to contribute to the pit crew.

We encourage students who have driven and/or operated at an off-season event to participate in the selection process, which is held once the current year’s robot is complete enough to do testing. The process starts with a written test evaluating the game rules and knowledge about The MidKnight Inventors as well as what to expect during an actual competition. There will then be at least three (3) opportunities to demonstrate drive team skills in a series of trials.

Mentors watch the candidates through practices and trials to assess communication skills and the ability to drive/operate successfully. We also routinely pair up different driver/operator combinations until we select the combination of people that we believe will work the best. *These trials are specifically designed to display the abilities and skills of all the candidates and simulate how they would perform under real match conditions/scenarios.*

Human players are selected based on tryouts to determine the student's skill set in the areas that in which human players are needed (ex. throwing frisbees, shooting a ball) as well as their potential contribution to the pit crew. This includes their ability to communicate with the Drive Team in returning game elements to the field.

The coach is a pre-selected adult mentor who will be responsible for working with and synergizing their Drive Team throughout the build and competition season, as well as working with the Strategy subteam and mentors to generate the season’s various plans & plays.

Since the Drive Team IS a team, we will select students for positions *based on their ability to work well with each other as well as their objective skill. Teamwork, communication, and demonstrated leadership are key here.*

We will also select a back-up team that will be ready to perform in case our drivers fall ill or cannot make an event due to an emergency. This back-up crew has the same responsibilities as the drivers, and the coach may choose to substitute a back-up team member within the drive team at any time.

Mentors choose the candidates that can work well under pressure, work cooperatively with the rest of the team, and have a positive attitude towards the team, team members, and driving.

The Competition Drive Team members must not only communicate well with each other, but also with the Backup Drive Team and other members of the team. You are expected to attend all competitions if you are selected for a drive team (or backup drive team) position.

Drive Team members are responsible for:

- Attending all scheduled practices between and during competitions.
- Attending all of The MidKnight Inventors' competitions.
- Understanding the mechanics and design of the robot.
- Knowing the details of our outreach efforts and community activities.
- Maintaining a high level of dedication to the team.
- Helping the team & team members whenever possible.
- Having a complete understanding of FIRST's rules and regulations to minimize errors and penalties during competition.
- Listening to their coach's instructions and following through – both during the match and off the field.

2.8 Competition Pit Crew

At competition, knowledgeable team members are needed to troubleshoot various aspects of the robot during the event and speak to judges. These team members, referred to as a pit crew, will stay in the pit area as necessary. When other team members visit the pit area, they must follow all safety precautions and be courteous to the pit crew. Co-captains and mentors reserve the right to ask team members to return to the viewing stands at any time, since overcrowding can lead to safety hazards and impede robot repairs.

The pit crew is also responsible for speaking with judges at competitions when they approach the pit. Each pit crew member should be able to specifically describe various aspects of the robot, and what the robot does on the game field. The pit crew also needs to have knowledge of the team's offseason events, fundraisers, and outreach activities. Since it is unknown which judges will visit the pit to ask the team questions, all members of the pit crew must be able to talk about all aspects of the team, including the Chairman's Award submission, business plan, safety procedures, and the robot.

Students who are selected to be part of pit crew may include the drive team, Chairman's presenters, team co-captains, electrical and programming directors, safety captain, and others who have demonstrated exceptional talent in the manufacturing and design of the robot. These students will be approached by the advisor, in conjunction with the mentors and co-captains. They may also be tested on their knowledge of both the robot and other aspects of the team, such as award submissions and team history.

2.9 Fundraising and Financial Obligations

Team fees are determined at the beginning of each school year and will be based in part on the team's successful fundraising activities and donations. Apart from the team fees, it is anticipated that there will be additional transportation costs involving travel to competitions. **The fee for the 2017-18 season is \$300. After the due date of October 2nd, additional late-fees may be applied. Team fees are not refundable; after a student commits to the team, unpaid fees will result in an obligation on the student's record.**

Team Fee payment includes:

- Membership on the FRC team
- Attendance at various team events (outreach events, fundraising events)
- Opportunity to enroll in courses in Java, CAD, and other team activities
- Ability to travel to off-site and on-site competitions with the team.
- Access to tools and equipment in build site once certified
- Team uniform (one team t-shirt and polo)
- Permission to participate in the team's off-season events

The deadline for team fee payment by returning members is June 30, and the deadline for new members is October 2.

Each event's travel costs will be priced based on distance & other expenses, such as hotel accommodation. The average cost in 2016-17 was between \$20 for a single-day event and \$250 for a weekend overnight event. If the team advances to the World Championship in Detroit, we anticipate the travel fees for that event will be significantly higher due to distance and length of competition (~\$650). These fee estimates are based on the average student occupancy of four students per hotel room on overnight trips.

Please keep in mind that attending competitions is not mandatory, except in the case of those students who are interested in a team leadership position or those students on the drive team. For more information, see exceptions for drive team & leadership, and definitions for active team member.

Once a student has registered for an event, the fee is due and payable by check made out to "WW-P HSN Robotics", footnoted with the student's name in the memo field, **along with a signed permission form** given to the Advisor by the deadline. Other forms or paperwork may need to be submitted to the Advisor to travel to certain events and competitions. All of the paperwork must be submitted for a student to attend an event.

If the cost to attend an event is too expensive for a member of the team, then the student can speak with the Advisor about possible aid. We do not want to keep dedicated students away because of the travel cost!

Refunds cannot be made once the student has made the commitment to travel. Many hours go into planning an event based on student participation. If a student signs up to attend an event, the fee is due by the deadline. Failure to pay the fees for a trip will result in an obligation on the student's record that must be met before graduation.

Fundraising: All MidKnight Inventors are required to participate in team fundraisers throughout the year. Fundraising is an important obligation for all team members. Not only does it help the team raise money for team expenses, but it builds important partnerships with local businesses, the community, and donors. Fundraising events spread awareness of the team and FIRST in our community, and gives students experience with making a presentation on the team to potential companies and sponsors.

Fundraising will also help to reduce the cost of travel to off-site competitions such as the World Championship in Detroit. It is up to the team and its students to take the initiative on extra fundraising, so that they can minimize the cost-per-family to attend.

Apart from the various fundraising events, students will work with the Advisor and Mentors to solicit donations from businesses and fellow residents in the community, as a part of meeting their fundraising requirements. Parents are also invited to work with the Advisor and Mentors to secure donations from sponsors and will be called upon to assist at fundraising events.

Minimum Fundraising Requirement: In order to travel to any competition during the 2017-18 season, students must participate in a minimum of 70% of fundraising events per semester, including participation in mandatory large events (e.g. Minion Mayhem, FIRST Tech Challenge State Championship, MidKnight Mayhem, other hosted events each semester). A list of fundraising activities will be provided at the beginning of the school year. Participation entails being present with the team and **actively helping** the team at the venue. The Advisor, in conjunction with the mentors in charge of the event, will define the necessary time commitment for each event.

Section 3: Member and Team Expectations

3.1 *Enjoy yourself!*

“This is the hardest fun you’ll ever have!”

We are a competitive team, but that doesn’t mean we don’t know how to have fun. As long as you are staying within the law, West Windsor-Plainsboro district regulations, rules of the team, and follow FIRST’s value of Gracious Professionalism®, there is no problem! After all, we’re here to experience science & technology teamwork in a positive and fun environment.

3.2 *Academic Standing*

Team 1923 regards academic performance and student behavior as extremely important factors in team success. We follow the same rules for club participation as those listed in the WW-P North and South Student handbooks. Please refer to your school’s handbook regarding academic standing.

3.3 *Participation*

Team members should plan on participating in all team activities. Our goal on 1923 is to provide an atmosphere of teamwork and dedication to the team. The competitions and the outreach/fundraising events are essential for students to learn what FIRST is and continue to grow with those learning experiences. Team members should feel that they have done something meaningful for the robot/building process or the outreach/ fundraising process every time they come to the build site or attend a meeting.

Leaders can show or tell you what to do and help make sure you are given a chance to help the team. Students will gain the experience to take on leadership opportunities in the future. The more the dedication and time spent learning, the more opportunities you will find!

Remember to check your email each day.

There will be a lot of emails over the course of the year, and they will open up many opportunities for you.

3.4 Attendance

Students must maintain a good standing on the team in order to attend competitions, off-season events, and other activities. Good standing is defined in *Section 3.5 Travel Eligibility*.

Each student will sign in at the meetings. This gives the mentors an idea of how dedicated you are. We understand that other obligations may compete for your time. Remember, however, that a student's standing is determined by their participation when they are present. The Advisor & mentors must be informed of all other commitments at the start of the school year and ahead of the build season. **It is highly recommended that all team members attend every meeting. If you are not able to attend, you must inform the Advisor by email prior to the meeting time.**

Fall Semester: Our team meets every Monday for MidKnight U sessions. Missing more than two sessions will disqualify students from the travel team. In addition, we host several events during the fall which students are expected to participate in, in addition to their fundraising and outreach requirements (for example, Minion Mayhem, our FIRST LEGO League State Qualifier, November 18th 2017). We also hold a Mock Kickoff to be able to accurately prepare our students for their upcoming season. Mock Kickoff is required for new students & students in the leadership, and highly encouraged for veteran MidKnight Inventors.

Spring Semester: The six-week FRC Build Season for 2017 starts with Kickoff on Saturday, January 6, 2018. Attendance at Kickoff is mandatory and it is highly suggested that students interested in traveling with the team attend the next few crucial strategic meetings. Your attendance is of utmost importance and will affect your privilege to travel with the team. Attendance does not mean that students show up and loiter; we want you to be engaged in the discussions and projects.

Students will arrive on time and stay for the entirety of their session. If you only plan to come one or two days a week during this time you will not be able to keep up & understand how the robot was constructed. If you want to attend competitions, off-season events, and other activities, you will need to follow the guidelines outlined above and be an active participant within the team.

**We understand that school and family come first.
If you have a conflict, PLEASE let the Advisor know.**

IMPORTANT: Any cancellations of school for weather or holiday will certainly excuse an absence. However, we may still be working remotely in cases where possible. Please keep an eye on your email.

The Advisor/Mentors will only sign off for various merit-based applications (e.g. National Honor Society, NMSP, FIRST scholarships, college recommendations) if the member has been an active participant in many aspects of the team.

3.5 *Travel Eligibility*

In order to be eligible for travel to any competition during the 2017-18 season, students must meet both the minimum Fundraising and Outreach requirements, as well as their attendance and participation guidelines. Mentors and leadership keep track of these factors and maintain a list of eligible students throughout the year.

Good Standing: Students must meet their minimum of hours for team meetings both during the Build Season, and during MidKnightU. Students must also be academically eligible through the school in both academic and disciplinary areas. Participation does not simply mean showing up; it requires engagement with the material and your enthusiasm!

Fundraising: Students must participate in a minimum of 70% of fundraising events per semester. A list of fundraising activities will be provided at the beginning of the school year, and some events (such as our hosted FLL, FTC, and FRC tournaments) will be mandatory for all team members based on size and scale. Participation entails being present with the team and **actively helping** the team at the venue. The Advisor, in conjunction with the mentors in charge of the event will define the necessary time commitment for each event.

Outreach: Students must also participate in a minimum of 70% of our team's outreach events each semester. Our outreach calendar is always full, and some events (such as our hosted FLL, FTC, and FRC tournaments) will be mandatory for all team members. Again, participation entails being present with the team and **actively helping** the team at the venue. The Advisor, in conjunction with the mentors in charge of the event will define the necessary time commitment

Travel Paperwork & Payments: All team members must have their permission slips, travel paperwork, and payments submitted to the Advisor by the assigned due dates. If a due date passes and the requirements are not met, the student forfeits their space on the trip (but still owes the fee).

3.6 Acceptable Behavior

Students must conduct themselves in a respectable manner consistent with West Windsor-Plainsboro Regional School District's policies and procedures at all times. The Advisor and Lead Mentors reserve the right to remove a student from the team (or a team activity) at any time provided they have reasonable cause of misconduct.

Members of The MidKnight Inventors also represent our team's sponsors. We expect all students, parents and mentors to behave in a way that is acceptable and expected of such standards. At all times, students are expected to be respectful of other students, adults, and the facility and practice their *Gracious Professionalism®*, a core FIRST value.

Students are expected to be respectful of their mentors and peers at all meetings. Side group conversations and cell phone use are not acceptable when a leader or mentor is talking and you will risk having your device taken away for the remainder of the meeting or being asked to leave. Repeated instances of disrespectful behavior will affect a student's ability to travel. Students are encouraged to ask questions after the discussion leader finishes talking. Food is not allowed in the school classrooms.

Safety is the team's top priority, especially at the build site. Students are expected to be responsible for themselves, especially while using the team's property, tools and computers. Students are also responsible for knowing how to operate the tools and/or use team property appropriately with the guidance of a mentor. Closed-toe shoes and safety glasses must be worn at the build site and at competitions at all times. Long hair must be tied back.

Demonstrate your *Gracious Professionalism®* at all times, both within the team, and outside. This also applies to all Internet sites and blogs including Facebook, Twitter and Chief Delphi. When you speak as a member of FRC Team 1923, you must speak respectfully.

3.7 Competitions / Events

The MidKnight Inventors' dress code for competitions & public events is as follows:

- Team Shirt or Polo (depending on the event)
- Long Pants without rips, holes, or tears
 - Jeans or Khakis – no sweatpants, leggings, shorts, or athleticwear
- Closed-Toe Shoes
 - Skele-Toes, Crocs, etc not accepted
 - Sneakers encouraged – our events are often long days on your feet!
- ANSI rated Safety Glasses.

Students out of uniform when leaving for a trip will not be permitted on the trip. On overnight trips if a student is out of uniform on an additional day (packed the wrong items, for example), they will be required to sit in the stands for the duration of the event.

While we encourage additions to the uniform for team spirit, please add 'flair' respectfully and within our team's branding guidelines. You may not cut, alter, or modify your team uniform shirts out of respect for our team's imagery. For complete understanding of our team's branding, please see the Team Branding Package on the web site, under Resources.

At competitions, all MidKnight Inventors are expected to be respectful of other teams and refrain from all unsportsmanlike performance. Team members are expected to remain in the stands for the majority of the competition with the exception of food, bathroom, and Pit trips. If leaving the stands for any reason, team members are required to tell an adult mentor or chaperone. This is to ensure the safety of the student and to keep our section in the stands during competitions.

Students may not play video games or use any other multimedia devices at competition events; these include Nooks, Kindles, iPads, iPods, mobile phones, etc. This includes creating personal hotspots at events, as all wireless use is banned there. Please adhere to the listed Event rules in the FIRST Manual for additional rules at the competition events.

When our team has a match, all team members other than the drive team are required to be in the stands. During the match, you are expected to be cheering and supporting our team. You can stand up to cheer when our team is playing, however make sure you are not in the way of other teams. Always look like you want to be at the competition!

During the awards ceremony team members are to show Gracious Professionalism® to other teams by standing and clapping until each team member has stepped onto and off of the field.

If these expectations are not followed mentors/advisors maintain the right to ask the student to leave, or to bar them from further competition travel during the season.

All teammates are expected to help clean up the viewing stands after competitions, as well as help take down the Pit. If the above requests are not completed, mentors/advisors have the right to suspend 1923 members from future events.

Scouting is an important part of the competitions we attend, and to the team as a whole. If you are in the stands, you are expected to scout when we need you (regardless of your position in the team).

There will be plenty of opportunities to learn how to do this; and all students attending competition are **required** to have a working understanding of how our scouting system works. Collecting match data is one of the most integral parts of our success at events, and all team members on the trip will be asked to take part in data collection and match analysis at some point.

Often, the team will stay at hotels for overnight events. In those cases, students must adhere to the hotel's policy and regulations. Students are prohibited from using the swimming pool or exercise center without prior approval by Mentors & Advisor.

In addition, team members are not allowed to use the microwave, stove, oven, etc. Mentors will lay out the rules regarding ordering food, going to other rooms, etc, and these rules must be followed. Students are expected to be respectful to the hotel staff and others staying at the hotel. Failure to comply will result in the student being sent home from competition. The hotels that we stay in are generous enough to accommodate a large number of us, but they also reserve the right to remove us or prevent us from staying in the future, so it is important that MidKnight Inventors behave respectfully.

3.8 *Self-Motivation*

Please remember that you are your own best advocate. No adult mentor or student captain/leader will '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 (That is what they are there for!) 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 of what can be done, please talk to a Mentor. Self-motivation is what drives The MidKnight Inventors!

3.9 *Communication*

All communications with regard to team meetings, events, etc. will be sent via email from Mentors and Captains. Students must have an active email address that they check regularly. Bulletins and a calendar are also available on our website at FIRSTRobotics1923.org. The website is updated on a regular basis.

All emails you receive from the team should be opened and read thoroughly. Do not discard them based on the subject line. It is suggested to have a folder for all robotics emails, to find permission slips or important information quickly. Emails are the closest thing to instant information and it is very important to check for emails every day, especially during the build season. Email provides the team with a quick means of communication, and its importance should not be understated.

3.10 *What do I gain by being a MidKnight Inventor?*

- **The skills of teamwork with peers and adults:** Students have the opportunity to work with professionals in engineering and business fields.
- **Learning to establish and work with a schedule,** and finish a project on time for a deadline.
- **Exposure** to the fields of engineering, finance, computer technology, and marketing. Most students are not exposed to this in school!
- **Develop leadership,** and presentation skills
- **Being a team player,** as well as an independent problem solver
- **Being a role model** to elementary and middle school students by getting involved in our other FIRST programs
- **The opportunity to share and gain more knowledge** in the skills of science and technology
- **The opportunity to access** all facets of a program that designs, delivers, and uses a 'real world' product (the robot) to perform set goals and specifications- FIRST is the closest a student can get to experience engineering.
- **Over \$50 million** in FIRST college scholarships.
- A team bonding experience and **friendships that last a lifetime.**

- **3.11 *Parental Involvement***

Parental involvement is a **requirement** on The MidKnight Inventors. We need every family to lend a hand and we welcome your support. **Being involved is both fun and rewarding!**

Mandatory Events:

Minion Mayhem, November 18th

FIRST Tech Challenge State Championship, February 25th

MidKnight Mayhem, June TBD

There will be sign-up sheets for parent volunteers for each team activity. The team will frequently ask for and encourage parents to be involved at additional outreach, fundraising, and team activities.

Here is a brief list of activities where we need parent volunteers throughout the year:

- Chaperone at competitions
- Food contributions & food service at the competitions we host
- “Runners” for day-of event needs
- Setup & Tear-down assistance at hosted events
- Assist with fundraising efforts & community education / outreach events
- Lend engineering, programming, and/or construction skills during the season
- Other duties, as assigned

More opportunities will be available throughout the year. Please respond to these emails in a timely manner. We need every member’s support, both student and parents, in order to make the team a success.

Our large fundraising events cover substantial portions of the travel costs for our students. If a student is eligible to travel but parents have not assisted with team events, additional travel costs will be assessed.

Section 4: Agreements

4.1 Transporting your student home from an FRC 1923 event

In order for a parent or guardian to drive a team member home from an event site, the Advisor must be notified by email at least **one week** prior to the event date. The team Advisor/Mentor cannot release any student who does not have written notification from the parent prior to an event. The parents who are picking up their student must speak to the Advisor before departing.

Team members' parents nor student drivers may not take another student from an event without written permission from that student's parents.

If there is a team bus secured for an event, students must ride with the team to the event in order to be considered a part of the team for the trip. If the team is attending the event, students should plan to attend the entire event.

4.2 Transportation with Adult Mentors

Adult mentors may offer to transport students using their personal vehicles, such as carpooling to an event (usually local and off-season events). In such cases, the student is responsible for his/her own safety, well-being, and must be respectful of the parent/mentor's vehicle. A signed permission form is required for a personal vehicle.

By signing the handbook, the student and his/her guardian release adult mentors from liability if an injury occurs and agree to behave appropriately when riding in a parent/mentor's vehicle. In the event of mentor or parent transportation an additional form is required and will be provided by the advisor.

4.3 Publicity & Public Representation

Students and other personnel associated with the team often take photographs and videos to commemorate our successes and preserve team heritage. These photos and videos may be used in media related to the team and/or the school district with the consent of the owner of the media in question.

By signing this handbook, students are giving the team their permission to use any public (where public is defined as the state in which the image or media in question is given to the team or is considered to be the intellectual property of the team as a whole) photographs and/or videos relating to the team within the student's ownership. This permission also extends to the individual's name and comments for press releases and other published media related to FRC Team 1923.

Students/parents must also sign a Mid-Atlantic Robotics form and a FIRST form giving FIRST and Team 1923 the right to publish any photograph of the student taken during an event. A student may still participate with 1923 without the FIRST or MAR agreements but will not be allowed to attend any competitions with the team.

By signing this handbook the student & parents also agree to adhere to all of Team 1923's at event behavior rules, and agree to conduct themselves, both in-person and online, in a way that reflects well on The MidKnight Inventors. Failure to do so can and will result in removal from the team.

FRC Team 1923 Handbook Agreement 2017-2018

Please sign & return by October 2nd, 2017

I, _____, as a participant on FIRST Robotics Competition (FRC) Team 1923, The MidKnight Inventors, agree to abide by all the rules and consequences stated in the FRC 1923 Team Handbook. **I certify that I have read the handbook and will abide by all the rules/regulations/releases therein.**

Student Signature _____ Date _____

Student Name (Print) _____

Student Email (Print) _____

Cell Phone _____

I, _____, as a parent/guardian for a student on FRC 1923, The MidKnight Inventors, agree to abide by all the rules and consequences stated in the FRC 1923 Team Handbook. **I certify that I have read the handbook and will abide by all the rules/regulations/releases therein.**

Parent/Guardian Signature _____ Date _____

Parent/Guardian Name (Print) _____

Email _____

Home Phone _____ Cell Phone: _____

Parent/Guardian Signature _____ Date _____

Parent/Guardian Name (Print) _____

Email _____

Home Phone _____ Cell Phone: _____