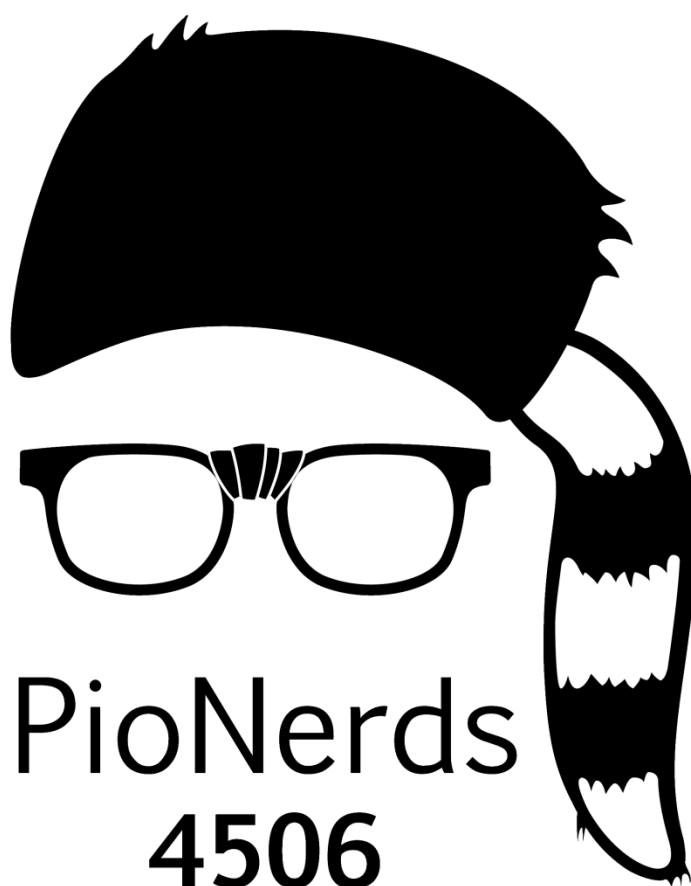


PioNerds - Team 4506  
Hill-Murray High School  
Team Handbook



# Introduction

We are excited you are a member of Team 4506, the PioNerds. This handbook contains the key policies, goals and expectations of Team 4506 and its members along with other information you will need.

The successes of the PioNerds and its activities are all thanks to the dedication of our members. Your participation is essential to fulfilling our program's goals. Every member's commitment and responsibility keeps our team running smoothly. We hope that as a PioNerd, you will acquire life skills that you will continue to use throughout college and in your future career.

# Mission Statement

We aim to equip a community of students passionate about science and technology with a foundation of technical, social and leadership skills to become the next generation of leaders who create positive change in their respective career fields.

# About

The PioNerds give students the opportunity to become fully immersed in an environment of dedicated, like-minded students interested in engineering while acquiring the necessary skills to achieve their future goals. Not only do members acquire technical skill sets, they also learn the fundamentals of other corporate tasks, such as project management, leadership, team building, marketing, finance, etc. More important than any competitive success or awards, the students of Team 4506 grow academically, intellectually, and socially. PioNerds gain a better understanding, a greater respect, and a more profound appreciation of the benefits of a good education. In line with the missions of parent organizations, Hill-Murray PioNerds, Team 4506 inspires and motivates our students to avidly pursue their academic, career and personal goals both during their time on the team and in their futures.

# Team History

The PioNerds was founded in 2013. While the team's student members changed, the PioNerds have continued to flourish. Notable accomplishments and events include:

- 2013 : PioNerds begin competing in the FIRST Robotics Competition
- 2017 : PioNerds win Iowa Regional

# What We Do

PioNerds members participate in a number of technical programs, as described below.

## The *FIRST* Robotics Competition (FRC) and Build

The FIRST Robotics Competition comprises of more than three thousand teams worldwide and releases an annual challenge requiring teams to design, build and program robots to compete in 3 vs 3 games.

Members work with faculty advisors and mentors to design and build advanced robots to compete in the FIRST robotics competition. After the game is revealed, FRC robots are built using computer-aided designs and advanced metalworking equipment. Over the course of an intensive 6 week period, PioNerds builds a competition robot and a practice robot. At the end of the build season the competition robot is bagged and tagged while the team continues to work on the practice robots until competition.

## Scouting and Strategy

Competitions require an element of strategy in addition to technical capability. All students are free to contribute to strategy, especially at whole-team discussions throughout the build season.

Scouting, on the other hand, occurs during the tournaments, and serves to evaluate the strengths and weaknesses of the competition, develop match strategies and determine which robots to team up with during alliance selection.

## Sub-teams

All nontechnical work on team projects is divided into different categories and assigned to the corresponding sub-team. Each sub-team is headed by a student leader who delegates work to its members. Every student is assigned to one sub-team based on their application preferences. They will have obligations to this primary sub-team and be responsible for completing action items delegated to them. In addition, students are encouraged to join and participate in additional sub-teams, as long as they fulfill their obligations to their primary sub-team.

Sub-teams support the whole team in completing vital nontechnical tasks, so that the team functions effectively in all areas. Leaders will take note of student's participation and contributions on their sub-team and inform the mentors. If the student is found to be lacking, this feedback may lead to the mentors warning students and possibly impacting their opportunity to participate in a competition event.

Members on the leadership team without a sub-team are not obligated to work on a sub-team due to their leadership responsibilities.

The functions of each sub-team are listed below.

## Public Relations

Members of the Public Relations sub-team have the following responsibilities:

- Maintain the PioNerds public image at public events and engage our audiences through school announcements/posters, Facebook, Twitter, Chief Delphi and other social media channels
- Ensure that FRC team events are documented and publicized through the schools and the teams various social media platforms
- Coordinate and organize appearances and robot demonstrations
- Plan sponsor recognition events and/or send sponsor thank-you to maintain good relations with existing sponsors
- Plan year end team banquet

## Finance

Members of the Finance sub-team have the following responsibilities:

- Create and update the team budget while tracking all team expenses, including the purchase of materials and equipment
- Attract potential sponsors by raising awareness about the team and creating donor materials
- Organize and implement a fundraising activity
- Create a comprehensive financial statement, create and maintain a business plan and ensure the team stays within its budget
- Generate a bill of materials for FRC season to ensure the correct tracking of robotics expenditures, allowing the team's purchases to be easily viewed and understood

## Graphic Arts

Members of the Graphic Arts sub-team have the following responsibilities:

- Create and maintain the team's identity standards
- Create sponsor decals for the robot, sponsor and competition awards, team apparel, merchandise and publicity materials including banners, fliers, handouts, and displays
- Support the media needs of the other sub-teams, create templates and graphics for media materials for the team
- Create or support digital animation as needed

## Strategy & Scouting

Members of the Strategy & Scouting sub-team have the following responsibilities:

- Master the game manual and determine what maximizes points during an event
- Fully understand the game, the rules and the playing field
- Must keep up to date with the FRC Q & A system, team updates and other game related information on other sites like Chief Delphi
- During competition, evaluate the strengths and weaknesses of the competition
- Develop match strategies during competition and determine which robots to team up with during alliance selection
- Create an application to be used at the competition to ease the scouting

## Safety Team

Members of the Safety sub-team have the following responsibilities:

- Provide safety training to all PioNerds members
- Must fully understand the Safety Rules outlined in the FRC game manual
- Attend the safety meeting at the FRC competitions
- Ensure there is a fully stocked first-aid kit at all robotic functions
- Create and submit a safety animation (work with graphic arts and/or programming team)

## Logistics and Operations

Members of the Logistics and Operations sub-team have the following responsibilities:

- Take photos and video footage to document team events for use in videos, publicity materials and award submissions
- Write and enter submissions for several FIRST awards such as the FIRST Chairman's Award
- Write materials for the team's website and document the FRC builds and events
- Maintain the team website to contribute to the team's public image, communication, and success in various website competitions
- Determine if the team will produce give-away promotional items (buttons, stickers, etc.)
- Create and maintain the pit display
- Responsible for FRC competition preparation including materials packing, loading and unloading, scouting materials, pit construction, pit clean-up, transportation, lodging, meals and participation

## Robot Design

Members of the Robot Design sub-team have the following responsibilities:

- Responsible for design, construction and maintenance of robot
- Must fully understand the robot rules as outlined in the FRC game manual
- Create a digital design of the robot
- Develop software for the FRC robots and the Driver Station. Robots are programmed using advanced control algorithms in Labview, RobotC, C++, and/or Java
- Must go through the FRC Inspection Checklist prior to bag up and before each competition to ensure the robot is ready for competition
- Produce the Cost Accounting Worksheet (CAW), listing all items on the robot per FRC rules. The CAW is presented to judges at the time of robot inspection

## Joining the PioNerds

Membership is open to all students attending Hill-Murray High School. All interested students are invited to attend the informational meeting, talking with team members and mentors to learn about all the aspects of the team.

Following a decision to join the PioNerds, students must turn in the completed contract at the end of this handbook to a faculty member associated with the robotics team.

## Eligibility

In order for students to be eligible to participate on the team and at competitions, they must:

- Turn in the completed contract at the end of this handbook
- Maintain academic eligibility
  - Academic eligibility requires students to maintain GPA above a 2.0
- Comply with rules established in the PioNerds handbook
- Actively participate with the team for the duration of the robotics season

For additional eligibility to participate at competitions, see the competition eligibility section later in this document.

## Member Obligations and Opportunities

### Team Dues

Due to the high cost of materials, registration and other fees associated with robotics, each team member is expected to contribute the Hill-Murray activity fee for team dues. This is billed through the family's Hill-Murray account. Additional fees may be accessed depending on the number of events and other expenses. In return, each student will receive a team t-shirt. Please contact a faculty advisor if you are unable to financially meet this requirement.

### Fundraising

To help keep the costs down, a fundraising activity will occur early in the season. All team members are also required to participate in the fundraising activity.

### Meetings

Whole team meetings occur at various times during the robotics season. It is mandatory that members attend all meetings. Other project groups and sub-teams will also have meetings as announced. Certain meetings will be declared "Critical Meetings" as a prerequisite for attending competitions or other events.

### Mandatory Events

During the year, all team members are also required to attend the following events:

- Mandatory Returning Member Meeting – First Month of School
- FRC Kickoff – Beginning of January

The team leadership may announce other mandatory events during the year. Students who cannot attend a mandatory event should speak with a faculty advisor at least a week in advance of that event.

## Communication

All members are required to have an active school e-mail address that is registered with the team. They must also check it daily. Messages will be communicated to members via email, during meetings and on the website.

## Team Website and Calendar

The team website is located at [PioNerds4506.github.io](https://PioNerds4506.github.io). The Team Calendar is located on the Members page.

## Workshops

Throughout the year, workshops are held to teach the team needed skills. Members are encouraged to take advantage of them and attend. Mandatory sub-team specific workshops may also be held in order to introduce members to sub-team specific skillsets.

## General Information

### Behavior

All members are expected to behave maturely and professionally at all times and comply with the standards of Hill-Murray. Members whose behavior is below the standards of the PioNerds will face disciplinary action.

It is important that all team members remember that whenever they are engaged in a team-related activity, whether online or in person, they are representing the PioNerds. Their actions will reflect upon the team, our sponsors and Hill-Murray. Team members should treat their teammates, members of other teams and the general public with kindness and respect at all times.

At competition, those who are not PioNerds members but are cheering for, or representing the team in any way, such as parents and friends, must adhere to these guidelines as well.

## Submissions & Publications

To maintain the team's high standards of quality and imagery, the leadership team must approve any documents or media pertaining to the team prior to their release. This includes award submissions, publicity materials, news articles, pictures, videos, posts to social media or discussion forums and the website.

## Confidentiality

PioNerds prides itself on its competitive excellence and on being a source of inspiration and mentorship for other teams. The team shares ideas and design concepts with other teams and offers help to anyone who asks for it. However, the team believes that helping others work through the engineering process is much more effective than giving away fully-formed solutions and designs.

Members are not permitted to disclose any ideas, designs, documents, photos or videos to anyone not affiliated with the PioNerds without the explicit approval of the leadership team. Confidentiality is taken very seriously and is punishable up to dismissal from the team.

## FIRST Robotics Competition (FRC)

The FIRST Robotics Competition is an advanced competition which begins in January and occurs for the remainder of second semester. The FRC team works together on a single robot design, with subgroups existing for each aspect of the robot. All members can participate in any part of the design or build process. No prior experience is necessary.

- FRC Build will occur for the duration of second semester and a portion of the first semester at the discretion of the leadership team.
- Build sessions will go from 2:30 to 4:30 p.m. twice a week and from 9:00 a.m. to 3:00 p.m. on Saturday. However, specific build dates may change depending on the discretion of team leadership and mentor availability.

## Facilities

### Hill-Murray Robotics Lab

The Hill-Murray Robotics Lab serves as the primary workplace for almost all robotics activity on the team.

#### ***Rules & Guidelines for Team Facilities***

- No member is ever to work without a mentor or faculty moderator on site.
- Food and drink is allowed at team facilities only at the discretion of an adult mentor or faculty advisor. Members must use common sense when given permission to have food and drink.
- Cell phones must be put away and cannot be used without permission of an adult mentor or faculty advisor.
- When finished using a tool, it must be returned to its designated location in the lab. At the end of every work session, all tools and materials must be put away.
- If a member leaves before a work session is over, that member must clean for at least fifteen minutes before leaving. Members must announce to a mentor when they begin cleaning for credit.
- Members are not allowed to leave the lab before notifying and signing out with a mentor or faculty advisor.
- If a power tool malfunctions or breaks, it must be reported to a mentor immediately.
- Electrical devices of any kind may never be powered by daisy-chaining cords or power strips.
- Always wear safety glasses and other pertinent safety equipment when operating power equipment or are near somebody who is operating power equipment.
- Loose hair and long clothing must either be tied back or removed before a member is permitted to use any machine tools.



- Members must partake in a robotics related activity if they are in the lab. If a member is caught not participating in build they will be asked to leave the lab. Horseplay and games will not be tolerated.
- Faculty and mentors always have the final word in any situation where safety is at stake. This is due to the hazardous nature of Robotics.
- All applicable rules of Hill-Murray apply at any other place where robotics work is being done.

Failure to comply with the established rules will result in disciplinary action by adult team members and/or dismissal from the lab.

## Identity

The PioNerds are known throughout the robotics community and has a very distinct identity associated with it.

### Identity Standards

The PioNerds has developed a set of comprehensive identity standards to help maintain and preserve our strong team identity. The policies outlined in the identity standards are binding and must be followed for all team appearances and communication. For more information, see the Identity Standards posted on the team website.

### Dress Code

The dress code must be maintained at competition, all off-season events and robot demonstrations. Maintaining the dress code is encouraged on the school days before and after a robotics competition in order to raise awareness at school. When indoors, the team shirt should not be covered. Hats and accessories should be one of the primary team colors if possible. The team shirt should never be worn over a collared shirt. On the first day of FRC tournaments, official team shirts must be worn. Above all, just dress reasonably and look professional..

### Photography and Media

All members must be willing to be photographed and appear in team-related publications.

## Competitions

### Eligibility

Eligibility for overnight FRC tournaments and dismissal from school is determined by the faculty & mentors. They will look at a member's participation and contributions throughout the semester. All members are encouraged to attend local tournaments.

### Expenses

Certain competitions require travel. Some competitions do not allow food to be brought into the facility. So attending members may need to purchase their own meals at.

## Roles & Responsibilities

Prior to competition, members will be divided into drivers, pit crew, scouts, and documentation. It is vital to the success of the team that members maintain the roles that they are given. When at competition, members are not permitted to engage in unrelated activities, such as homework without express permission from a mentor. However, members are encouraged to watch matches, meet other people and look at other team's robots.

## Behavior

Behavior that is deemed below the PioNerds standards will result in punishment by a faculty advisor or adult mentor. Severe infractions may result in an immediate flight or bus trip home at the expense of the team member and/or dismissal from the team.

## School Absences

If a member will miss school due to a robotics event, it is that member's responsibility to inform teachers of an absence at least one full week ahead of time and arrange for completion of missed work. That member must also fill out a planned absence form one week prior to the date of absence. If a student misses school due to illness, they may not attend any robotics function later that day. Students may not miss school after a tournament due to fatigue or postponed homework.

## Transportation

### Local Events

Several events such as FRC zero day competition, State Fair demonstrations and other events within the Twin Cities may not have transportation scheduled by the team. For these events, it is the member's responsibility to arrange transportation.

### Travel Tournaments

Hill-Murray will arrange all transportation to/from regional events. Team members may be required to arrange their own transportation to the airport. All student members must travel with the team. Members must sign up in advance for all long-distance tournaments.

## Team Leadership

The PioNerds are managed by a leadership team consisting of student leaders, adult mentors and faculty advisors. The leadership team's duties go beyond those of regular members. This team makes administrative decisions, plans events and manages projects. Every member of the leadership team puts in hundreds of hours of work behind the scenes to ensure that the team operates smoothly.

## Leadership Meetings

The leadership team meets weekly year-round. All leadership meetings are closed to students not on the leadership team, but the meeting minutes will be publicly available to team members. However, students are encouraged to approach leadership team with relevant concerns.

## Leadership Team Selection

At the beginning of each school year, a selection committee consisting of mentors, faculty advisors and alumni will choose the leadership team. The selection process is based on previous leadership experience, dedication, expertise and a written application. Leadership roles are modified every year.

## Leadership Roles & Responsibilities

### Team Captains

The team captains are responsible for keeping team unity, making sure the leadership team functions as designed, running all team meetings and being the team spokespersons. They also oversee the overall robot design process and technical aspects of FRC as well as overseeing the organization of workshops and ensuring that team members are adequately prepared for the season. The team captains need to have all team members be prepared to speak with the judges at competitions, focusing on the elements of the team and robot they are most proud of along with how the team or robot meets the criteria of a specific award. Ideally at competitions, the captains should speak with the judges.

### Sub-Team Directors

Each of the following sub-team leaders is responsible for ensuring his/her team completes their responsibilities as outlined above in a timely fashion by setting achievable milestones.

- Public Relations Director
- Finance Director
- Graphic Arts Director
- Strategy & Scouting Director
- Safety Director
- Logistics & Operations Director

### Technical Leads

These leaders oversee the robot design process concerning one or more particular subsystems of the robot. They also are responsible for organizing workshops and ensuring that team members are prepared for the season. At the end of the season, these leaders archive the robot design (robot code, CAD files, etc.) in the designated location..

## Contacting Leaders

If you are interested in working on a leader's sub-team, or have a question about work you are doing for that person, message them through email by referring to the leaders page on our website at.

# Authority of the Handbook

The rules and policies set forth in this handbook are binding and must be followed by all team members. The handbook may contain appendices. These documents are binding as well. The leadership team has the authority to modify the handbook at any time. The team will be notified of any modifications. All students must acknowledge the Authority of the Handbook by signing the contract and form below.

# Student Contract

By signing below I acknowledge and understand all points listed below:

- I have read the handbook describing PioNerds Team 4506 and agree to comply with the policies outlined within.
- Participation in the program requires attendance at mandatory events and I will comply with the schedule of said events.
- The equipment used during construction of the robot can cause serious harm injury if not used correctly. I understand that members are not permitted to use any piece of equipment until they have been instructed on its safe use and are not permitted to use any piece of power equipment without adult supervision.
- I will clean up before leaving a PioNerds event or practice, including putting materials and tools back where they belong.
- As long as my parents have signed the Hill-Murray liability release/consent form, I will only ride in a car driven by an adult mentor, faculty advisor, approved parent or student or myself to any robotics function.
- I agree and consent to allow my photographs, name or comments to appear in media related to the PioNerds.
- I understand that violation of any of the policies above is punishable up to and including dismissal from the team.

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Student Name

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Hill-Murray Student ID

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Email

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Student Signature

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Date

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Parent Signature

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Date