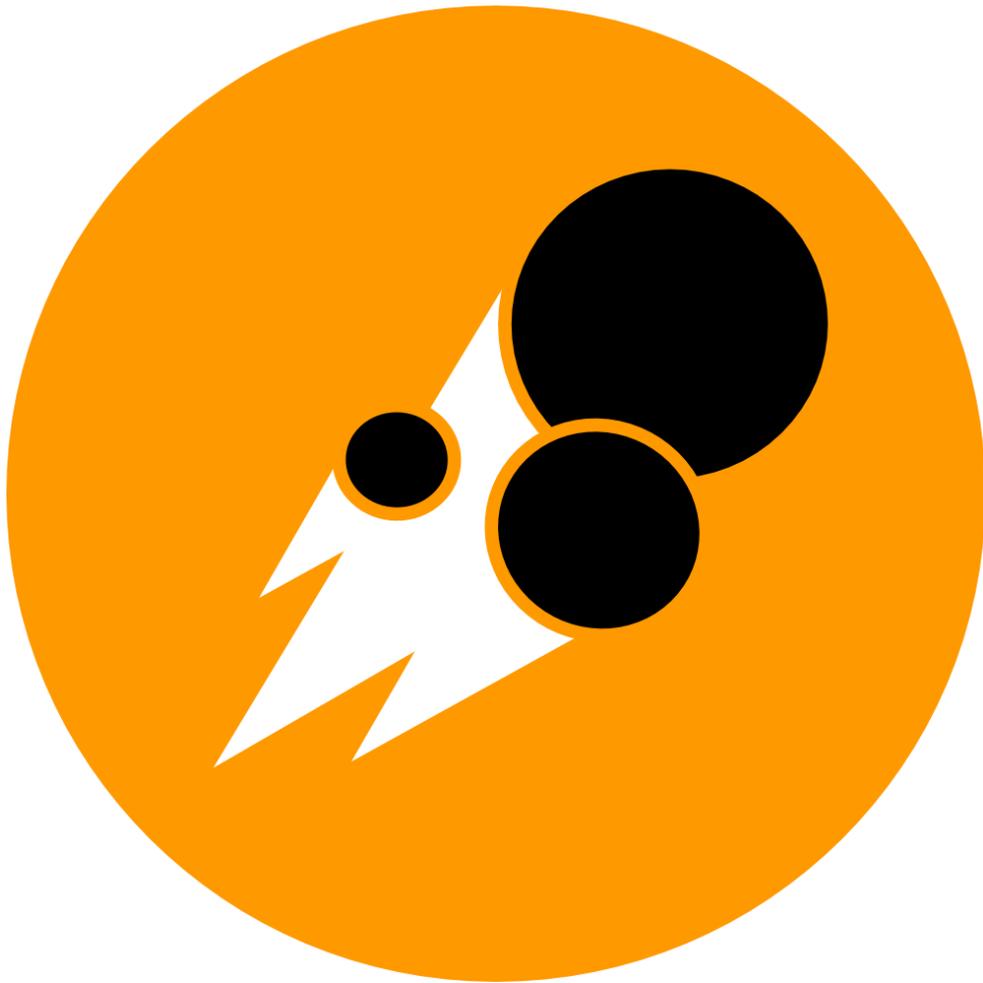


# Team Neutrino

## FIRST Robotics Competition #3928

2015-2016 Team Handbook



## Purpose

This handbook is an information source and communication tool for the FIRST Robotics Competition team, Team Neutrino, their supporters, families, and for other FIRST Robotics teams.

## What is FIRST?

A unique varsity Sport for the Mind™ designed to help high-school-aged young people discover how interesting and rewarding the lives of engineers and scientists can be.

## Mission

The mission of FIRST is to inspire young people to be science and technology leaders, 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.

## 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.

## Student Benefits from the Program

- Learn business skills such as time management, leadership, and public speaking.
- Expand knowledge outside of school, especially in the technology and engineering areas.
- Promote hands on learning, critical thinking, and problem solving skills.
- Work side by side with professional mentors to develop new skills and build upon existing ones.
- Build self-confidence.
- Apply for college scholarships through the FIRST Scholarship Program.
- Develop interpersonal skills.

## Internet Resources

**Team Neutrino:** [www.teamneutrino.org](http://www.teamneutrino.org)

The Team Neutrino website is our primary method of keeping the community informed about team events. It is also a central location for team resources and history.

**FIRST:** [www.firstinspires.org](http://www.firstinspires.org)

The FIRST website has information for all FIRST programs, including marketing resources, communication, scholarships, teams and events in your area, newsletters, updates and a Q&A form for the game manual, a season calendar, as well as other valuable resources.

## Team Partnerships

Team Neutrino is a partnership between local organizations, businesses, high school students, and professional, college, and parent mentors.

### Sponsors and Partners

- Story County 4-H (Liability coverage, money handling)
- Iowa State University (build space, students and sponsoring teachers)
- John Deere (Professional mentor, \$5,000 to cover the registration fee)
- Danfoss (\$5,000)
- Monsanto Fund (\$5,000)
- 3M (\$2,500)
- CIT Signature Transportation (in-kind transportation)
- Quality Manufacturing (in-kind donations)

### Active Members

- Story County 4-H Members
- Iowa State Student Mentors
- Sponsor Employees (Mentors)
- Team Members' Parents

## Overall Team Goals

- Provide students with hands on STEM (science, technology, engineering, and math) experiences at the high school level that would not exist otherwise.
- Act as a real world application to supplement material learned in the classroom.
- Create a sustainable team.
- Establish and maintain a positive and recognizable team image.
  - Compete at the highest level in FIRST
  - Create a robot that is competitive in the FIRST Robotics Competition
- Be eligible to apply for all awards (except Rookie All-Star) offered at a Regional Competition
- Promote STEM, FIRST programs, and Team Neutrino at community events through volunteering and outreach.
- Act as a role model to other FRC, FTC, FLL, and Jr. FLL teams.

## Team Communication

In order to keep updated with the team, please use the following methods:

**Website:** Our website ([www.teamneutrino.org](http://www.teamneutrino.org)) is used as a public location for information about the team. This includes general updates on the team as well as general and contact information for sponsors, fans, alumni and other FIRST participants.

**Email:** Weekly emails are sent on Sunday nights during the school year. Emails can be sent by any teammate. Dagney Paskach ([dagneypaskach@gmail.com](mailto:dagneypaskach@gmail.com)) will send out the weekly emails during the build season and off-season for team updates. If you have information for, or questions about, the weekly email, please contact Dagney.

**Calendar:** To access the team calendar with all team events (and meeting times), visit the following link: <http://www.teamneutrino.org/calendar/> When prompted for password, enter xxxx.

**Google Drive:** Team Neutrino uses Google Drive for team documents. *Access to these will be monitored and permission given to only the team members that need it.*

**Facebook:** Our Facebook page is found under "FRC Team Neutrino #3928." This is a public space to share team updates with our following communities.

**Twitter:** Our team's Twitter handle is frcneutrino. Updates here are similar to our Facebook. We also use our Twitter to broadcast our match results at competition.

**Team Meetings:** The team has a meeting schedule that fluctuates with each "season" (pre-season, build season, competition season, off season). Meetings will be announced via team emails and the team calendar. Members and parents can also find meeting times in the google calendar. Meetings are used for team conversation, important information, and other purposes that cannot be satisfied by email communication.

**Sponsor Communication:** Students and Mentors are responsible for updating team sponsors throughout the season to encourage a healthy relationship between the team and the sponsors. This can include monthly newsletters, thank you letters, meetings, etc.

All team members are expected to check their email frequently and use the team calendar. Team Captains and Mentors are responsible for updating the calendar/Google Drive, running team meetings, and sending out emails.

## Team Structure

The team structure is the general team organization of both students and mentors. Students are divided into subgroups to make management easier and to keep the team efficient and cohesive.

### **ALL CAPTAINS AND MANAGERS ARE APPOINTED AFTER AN APPLICATION PROCESS:**

After an application process, the Captain and Co-Captain are appointed by the mentors. After a second application process, the managers are appointed by their respective Captain. More than one Manager position can be held by a single student, however, no one can be both Captain and Co-Captain.

## *Technical Leadership*

### **Team Captain – Timothy Steward**

The Team Captain is the voice and personality of the team and must act accordingly. It is his/her job to keep the goals of FIRST in everyone's mind until "they get it." The team Captain should be the main speaker at all meetings with potential manufacturing sponsors. The Team Captain should be in charge of the team for all competition and building events.

- Team Spokesperson
- Liaison to FIRST
- Personnel management
- Acts as tiebreaker and has executive decision powers
- Accepts trophies
- Oversees the technical sub teams
- Runs meetings

### **CADD Manager – Woo Young Joo**

The Chassis sub-team finalizes and builds the robot drive base and basic frame. Member of this group are often also part of the manipulator group.

- Designs the frame, drive train, and scoring mechanisms
- Makes CAD renderings of the robot
- Takes charge of making sure all parts can be made either by shop tools or by the machine shop

**Mechanical Manager – Benjamin Steward**

The Manipulator sub-team finalizes and builds the scoring mechanisms. They should be heavily involved in strategy planning, as the final strategy ultimately dictates their tasks.

- Constructs the frame, drive train, and scoring mechanisms
- Takes charge of testing the individual components which belong to their subsystem

**Programming Manager – Logan Peters**

The Safety Captain makes sure that all team members and mentors are following FIRST's safety guidelines, as well as safety guidelines outlined by 4-H and Boyd Lab.

- Takes charge of building and programming the controls interface
- Takes charge of writing and testing all robot code

**Electrical Manager – Conor Albinger**

The Safety Captain makes sure that all team members and mentors are following FIRST's safety guidelines, as well as safety guidelines outlined by 4-H and Boyd Lab.

- Takes charge of wiring all electronics

**Safety Captain – Nicole Essner**

The Safety Captain makes sure that all team members and mentors are following FIRST's safety guidelines, as well as safety guidelines outlined by 4-H and Boyd Lab.

- Reads and understands the FRC Safety Manual
- Keeps Team Neutrino's Safety Manual updated
- Goes to the safety meeting at official FRC competitions

***Non-Technical Leadership*****Co-Captain – Dagny Paskach**

The Co-Captain oversees all things non-technical. He/she is in charge of making sure awards are submitted on time and that all non-technical projects are making headway. The Co-Captain needs to be organized and is in charge of making sure all non-technical activities are documented to ensure sustainability.

- Runs meetings in Captain's absence
- Coordinates non-engineering team activities
- Oversees the non-technical managers
- Directly oversees the Chairman's award submission
- Exercises final approval on all awards submissions
- Documents all team activity and supervises past team documents

**Outreach Manager – Tianxin Xu**

The outreach manager organizes and documents all community and volunteering events.

- Plans and organizes the team's outreach and volunteering events year round
- Is the primary contact for outreach event coordinators

**Fundraising Manager – Rucha Kelkar**

The fundraising manager is in charge of raising money for the team and maintaining contact with sponsors. He/she also maintains the overall team budget and acts as the primary contact for sponsors.

- Organizes and maintains contact with the team's sponsors year round
- Works closely with a mentor and fills the treasurer position.

- Must keep the team within budget

### **Scouting Managers – Takeshi Suzuki and Woo Young Joo**

The scouting manager develops the team's scouting system and electronic database; at competitions/ he/she oversees the scouting sub-team. He/she also runs the scouting meeting on Friday night of each competition.

- Stays updated with rule changes
- Takes charge of the development of our team's strategy prior to and during the competitions.
- Provides competitive information for the competition team prior to and during competition, and develops scouting database and data collection system.
- Organizes the scouting sub-team at competitions

### **Graphics Manager – Logan Peters**

The graphics manager is in charge of the team's image and making sure that the team image is recognizable and consistent from year to year. All designs must be approved by the Co-Captain before publication.

- Maintains and updates the team's marketing materials (handouts, buttons, pamphlets, flyers, etc.)
- Designs innovative marketing strategies to create a cohesive team image

### **Website Manager – Benjamin Steward**

The website manager ensures that the team's web presence is up-to-date by regularly adding posts on our website, Facebook, and Twitter. His/her primary job is to maintain the website and make it as professional as possible.

- Regularly updates website year-round
- Maintains the Facebook and Twitter pages as needed

### **Photography/Videography Manager – Lucas McLeod**

The primary location for team pictures and videos is the Flickr page. The photography/videography manager ensures that all photos and videos are present and organized on the Flickr. He/she also creates team videos and slideshows.

- Makes sure high-quality pictures are taken at all events
- Collects and compiles all media (pictures, video, etc.) in a place accessible to members on the team Flickr
- Creates a video for each of the following: Robot Reveal, Chairman's submission, Season Wrap-Up, IRI application

### **Public Relations Manager – Evan Williams**

The PR manager remains in the team's pit at all times during competitions so that he/she can talk to the judges and other teams about Team Neutrino. If the team wants to receive media coverage for events, the PR manager is in charge of acquiring this.

- Acts as primary pit representative at all competitions
- Contacts local media to get coverage for important team events

## **Schedule**

Emails will be sent about team meetings and the team calendar will be updated with the meeting times and locations. Below is a general overview of what each season is like.

## Kickoff

Each new game is revealed on the first weekend in January via a national broadcast by NASA. The team (and parents) will get together to watch the broadcast. The students and mentors will then begin the brainstorming and strategy process. The entire team will also read the rule manual and receive a kit of parts.

## Build Season

Once the game has been released, teams have six weeks to design and build and program their robot to play the game. This six week period is called the "build season." Typically meetings are every day except for Sunday (unless required, to be determined by the team). Saturdays are important work days and the team usually meets from 10am until 4pm. Smaller groups or sub teams may work different hours depending on what needs to be accomplished. The hours that are decided will be posted on the team calendar. At the end of the 6 weeks the robot is sealed and cannot be touched until the competition. The team usually hosts an open house for family, friends, and sponsors to come and see the robot before it is sealed.

After the robot is sealed, the team continues to meet to prepare for the competitions. Preparation includes improvements to the robot (spare parts, etc.) as well as non-technical responsibilities (scouting database, handouts, award submissions). The amount and hours of meetings depend on the amount of work that needs to be accomplished.

## Competition Season

The team decides which Regional competition(s) they would like to attend. This year, Team Neutrino will be attending Iowa (Cedar Rapids) and Minnesota North Star (Minneapolis). Robotics competitions are exciting and the atmosphere is very similar to a college spectator sporting championship. These competitions are the result of brainstorming, real-world teamwork, dedicated mentoring, project timelines, and deadlines.

Regional competitions are 3 days long. Wednesday is a load-in day. Thursday is a practice day for setting up the pit area, driving the robot, and making improvements to the robot (if necessary). All day Friday and Saturday morning are for the qualification matches, which determine team rankings. After qualification matches, the top teams select other teams to be on their alliance for the elimination matches which take place Saturday afternoon. Awards are given out following the elimination matches.

## Championship

The 2016 World Championship will be held in St. Louis and should the team qualify for the event, it would be decided by the team and mentors depending on funding and availability to attend. There are four ways to qualify for the World Championship Competition.

- Be on the winning alliance at a Regional
- Win the Chairman's Award at a Regional Competition
- Win the Engineering Inspiration Award at a Regional Competition
- Win the Rookie All-Star Award at a Regional Competition (we are no longer eligible for this one)

## Off Season

Once the competition season is over the team continues to do community outreach, marketing, and fundraising to create a positive impact in the community and prepare for the next season. Community outreach activities may include things such as:

- Demonstrations at local festivals and fairs (Iowa State Fair, Maker Fairs, Parade(s), etc.)
- Local school presentations (Ames, Gilbert, Ballard areas)
- Volunteering at FLL and FTC events
- Volunteering at summer camps for kids

The off season is also used to recruit new members, find new sponsors, and learn some of the skills needed during the build season such as CADD, manufacturing and machining, and programming.

## Program Costs

- Competition fees: \$5,000 per regional, \$5000 for Champs (if qualified): \$15,000
- Robot build costs: \$5,000
- Travel: (\$0 - \$5000) depending on location.
- Misc - t-shirts, flyers, robot graphics, etc. \$2,000

## Liability, Security, Risk

- 2-deep mentoring will be implemented
- A culture of safety will be developed
- Insurance for students has been attained through 4-H
- Permission slips will be utilized
- A team contract will be signed by all mentors, students, parents
- Students and mentors will be trained to use BOYD Lab by BOYD shop technicians

## Student Involvement

There are many ways for students to be involved with the team. In the fall, they participate in the team events and meetings. Starting in January, students are required to become more active members of the team and really get involved in the FIRST program. On the list below are some of the opportunities available for students.

- Team leadership positions
- Mechanical design
- Electrical design
- Software development
- Shop management, part fabrication & assembly
- Marketing, public relations & media publications
- Fundraising
- CADD
- Strategy development
- Robot operation
- Videography & photography
- Many more!

## Student Membership Eligibility

Students must put in a certain level of involvement to be considered an active member. In order to be considered "active," a student must meet these requirements:

- Keep school as their top priority
- Keep active involvement with the team by meeting the team's attendance expectations.
- Keep up to date with the team's progress
- Follow all ISU rules while on the ISU campus.

*Students who are disruptive to the team functions will not be eligible for team events*

## Student Attendance

Students are expected to meet the hour requirement in order to be considered "active" members and participate in team competitions.

### **HOUR REQUIREMENT:**

Grades 10-12 are expected to put in 120 productive hours during the 6 week build season (20 hours per week). Freshmen are expected to put in 90 hours (15 hours a week).

Students working on media/marketing/business can receive project based hours. Students wishing to receive project based hours must talk to mentors to determine projects and the hour amount associated. The students may also opt to count raw hours, but may not receive both raw hours and project based hours.

Students can "earn" up to 36 hours during the prior year's off-season and the current year's pre-season by doing outreach and volunteer events. *Off season competitions do not count towards these hours.*

There will be a system implemented to record number of hours for each student. Misrepresenting information in this system will result in immediate removal from the team. Students who fail to meet the team attendance expectations are encouraged to talk to the team mentors.

**GRADES ARE A PRIORITY:**

Students are encouraged and reminded that their studies are top priority. If this means that a Neutrino work sessions need to be missed due to school needs and studies, then that is supported by the team.

## Adult Mentor Involvement

Adult mentors are encouraged to help out in any way they can assist the team. The efforts of these sponsors must be student-focused and within the spirit of FIRST. Adult mentors will need to be approved by the team leadership and managing partners.

### Parent Commitment:

- Check email regularly.
- Attend scheduled formal team meetings.
- Provide their child with necessary transportation to and from meetings. If this is not possible for some reason, then they are responsible for finding a carpool or CyRide route.
- Provide support for the team. This may include chaperoning at the build site, making travel arrangements, contributing tools, making phone calls, etc.

## Team Travel

Only active team members are allowed to travel with the team and participate on the team. Any required permission slips and forms need to be turned in to be able to travel with the team.

Family members are encouraged to attend competitions with the team. They can either plan their own travel arrangements, or work through team travel arrangements. If they are using team travel arrangements they need to realize that they must abide by the specifics of the team travel coordinator.

### Travel Coordinator

This position will be held by a team mentor. He/she plans and organizes the lodging, meals, and transportation for the team's competitions.

### Travel Rules/Expectations:

- Students are expected to stay with the team at all times. Students may not leave the venue/hotel without mentor permission.
- Students will be using an informal buddy system. Roommates on the trip are the "buddies." Students are expected to help their buddies be timely at events. Students should note to mentors when a buddy is not present.
- Students are expected to be in their rooms by midnight. Students may be late if working on mentor-approved team activities.
- Inappropriate cross-gender activities will not be tolerated.
- Students staying with their relatives are not the team's responsibility when with the relatives.

- Students staying with their relatives must check in and out with the team lead mentor.
- Students and parents will be provided with an itinerary and contact information for every trip.
- Students are representing Team Neutrino when on team trips; they are expected to act appropriately and with respect at all times.

While we do not foresee any problems, students who break these rules will receive the following consequences:

1. Verbal warning from a mentor
2. 2nd verbal warning, must call home
3. Student is no longer invited to travel with team. Parent/guardian must arrange for the student's transportation home.

*Severity of the offence can impact the severity of the consequence.*

## **Conflict Resolution**

Being on team and working under a tight deadline can provide opportunities for conflict to occur. Please follow the following process in dealing with conflict:

1. Talk to the person privately to resolve your differences.
2. If #1 is not satisfactory, discuss the situation with the adult mentor of your sub-team.
3. If necessary, bring the concern to the team coach/coordinator.
4. Adult concerns need to be resolved without involving students. Concerns need to be discussed with the coach/coordinator

Special thanks to the teams who posted their handbooks on Chief Delphi:  
Team Winnovation #1625, BombSquad #16, CyberTooth – Rookie, and RUSH #27.