TechHOUNDS Robotics, FRC 868
Team Handbook
2015-2016

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1. TechHOUNDS and FRC

TechHOUNDS is the Carmel High School robotics team that strives to provide an innovative, team-based engineering and design experience. We strive to foster an appreciation and love of STEM through robotics, outreach, and strong team-community relationships, all while developing the technical and communication skills vital in the modern world. In order to achieve this mission, we participate in the FIRST Robotics Competition (FRC) along with 3500+ teams around the world.

Each year in January, the team is presented with a unique design challenge and given just six weeks to brainstorm, prototype, build, wire, program, and test a robot before competing at district, state, and international events. This intense yet fun environment provides students with invaluable experience in engineering, mechanics, electronics, programming, design, fundraising, and/or business (depending on student interests) in a real-world environment.

During the **preseason** (September to December), students gain experience working in a variety of divisions and select one division to pursue. They then are trained on the necessary tools and technologies vital to the function of their division. In addition, during the 2015-2016 preseason,

the divisions will work on tasks from a mock challenge designed to prepare all students for the challenge.

During the **build season** (January to February), the entire team is presented with a unique game challenge as described above. All of the divisions work together to create a fully-functioning and competition-ready robot.

2. General Information & Contact Information

General Information:

Founded: 2001
School Affiliation: Carmel High School
Location: Carmel, IN, USA
Meeting Room: C107
Demographics: ~ 100 students
Mentors: ~ 30

- Engineers/Business Professionals
  - Often from sponsoring companies and corporations (i.e. Delphi, Rolls-Royce)
  - Parents (Sought through parent meetings and opportunities to work with students during brainstorming)
- University Students/Alumni
- Carmel High School teachers and administrators

Sponsorship:

- Over 40 different independent corporate sponsors (not including parents)
- Major Sponsors ($2500 +):
  - Rolls-Royce, Carmel High School, Daniel F. and Ellen Frances Moriarty Fund for Technology and Leadership, Boeing, Delphi, Redali Consulting

Media:

- Website: techhounds.com
- Facebook: FRC 868 - Carmel High School TechHOUNDS
- Twitter: @TechHOUNDS868
- Instagram: FRC 868 - TechHOUNDS

Contact Information:

Please direct questions to **techhounds868@gmail.com**

Mr. Zachary Bonewit (Lead Faculty Mentor):

- (Emergency) Phone: (765) 499-7424
- Email: zbonewit@ccs.k12.in.us

Mr. Alex Ryker (Mentor and TechHOUNDS Alumnus):

- (Emergency) Phone: (317) 847-8539
- Email: acryker@gmail.com

3. Student Expectations

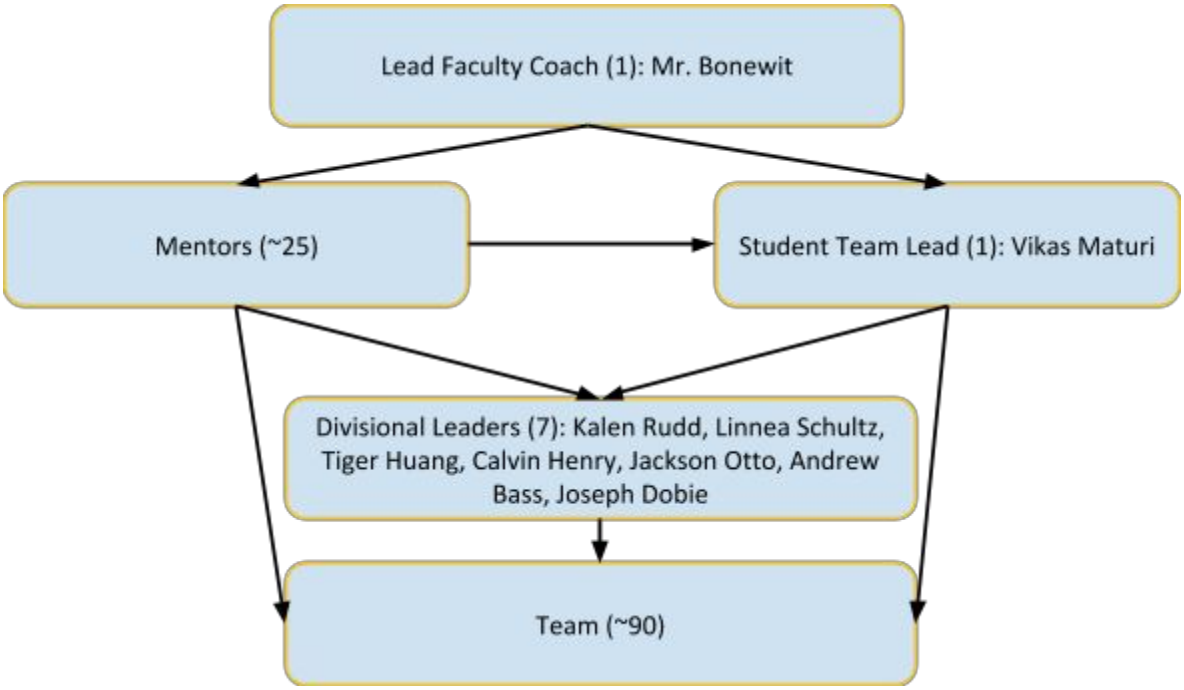
TechHOUNDS is NOT a team for the *casual* participant. It requires serious commitment; thus, we have stringent requirements for students to remain on our team.

1. **Participation:** Students must participate in 70% of build season meetings in order to remain on the team (80% in order to travel). If a student must miss a meeting for a pre-arranged event (i.e. doctor's appointment), presenting a note to Mr. Bonewit on the day of absence will prevent that absence from counting against the attendance record (excuse the meeting absence). If the student is absent from school on the day of a meeting, an email to Mr. Bonewit will excuse the meeting absence. Note: Missing TechHOUNDS meetings for other extracurricular activities does NOT excuse the meeting absence. Attendance checks will be done regularly throughout the build and competition seasons - students failing to meet these requirements will be asked to leave or not travel with the team to competitions.
2. **Professionalism:** Students are expected to conduct themselves in a manner that follows the guidelines of the CHS student handbook as well as to the standards of "gracious professionalism" set by FIRST. These rules are covered in more detail in the Code of Conduct, which must be signed by both the student and parent. Any student failing to abide by these rules will be asked to leave the team.
3. **Academics:** While being part of TechHOUNDS is an invaluable life experience, all members are first and foremost students. Students must maintain grades of **C or better** in all classes in order to remain on the team and travel. Grades checks will be done regularly throughout the build and competition seasons - students failing to meet these requirements will be asked to leave the team until their grades have reached the appropriate level or not travel with the team to competitions. Note: TechHOUNDS has several opportunities to help students that are struggling in any class. We provide free tutoring during all SRT's, afterschool on Tuesdays and Thursdays, and are willing to make separate accommodations.
4. **Be Proactive:** Students will not gain the most of their TechHOUNDS experience if they do not take initiative or get involved throughout the build season. The students that

have the most success and the most fun are those who constantly think of new ways to better the team.

4. Team Structure

The TechHOUNDS Robotics Team includes approximately 100 students, 25 mentors, and 50 partnering organizations from across the nation. Thus, the team maintains a core teacher/mentor base and a strong student leadership team to coordinate the team's progress, outreach, and miscellaneous programs. Furthermore, the team is separated into divisions (each led by elected student leaders) that manage and organize individual aspects of the team (details below)



Divisions: The TechHOUNDS Robotics Team is split into six individual divisions (Robot Operations, Electrical, Programming, Public Relations, Construction, and IT) each responsible for controlling a certain aspect of the team [see below]. We suggest that each member learn about multiple divisions and choose one division of interest to dedicate time to during the build season.

Robot Operations *(Leads: Kalen Rudd & Linnea Schultz)***:** The robot operations team is responsible for all mechanical aspects of the robot. They lead the strategizing session with the whole team during kickoff, and from there design, prototype, CAD, manufacture, and assemble

a practice and final robot. Throughout the preseason and build season, the division leaders isolate students who demonstrate technical competency and team dedication, allowing them to lead the several smaller subteams (prototyping, CAD, subsystems, drive train, etc.).

Electrical *(Lead: Tiger Huang)***:** The electrical team is responsible for completing the wiring and pneumatics system of the robot after it has been built. Throughout the build season, they train division members on the variety of tools and components used in the robot, and are generally given a single day to wire and hose the entire robot after it is complete.

Programming *(Lead: Calvin Henry)***:** The programming team develops and tests the code for the entire robot. This process involves planning for a variety of different autonomous scenarios as well as potential modifications to the robot throughout the build season. Furthermore, due to the large number of students on our programming division, many students work on outreach-based projects involving computer science.

Construction *(Lead: Joseph Dobie)***:** The auxiliary construction team works on building and machining not directly related to the robot (primarily based in wood). Their primary responsibilities include the pit for competitions as well as a development of a practice field.

IT *(Lead: Andrew Bass)***:** The IT team is responsible for maintaining the team website and developing the new scouting system each year. This program has been acknowledged as an excellent resource, allowing the input of very detailed data for every robot and live data visualization on a remote source (such as an iPad). This addition to the team has provided us with great success throughout the previous season, and we are looking to make our systems open source within the next few years.

PR *(Lead: Jackson Otto)***:** The PR team has the extremely important job of maintaining the face of the TechHOUNDS. This encompasses all outreach, award submissions, media (pictures and video), as well as team spirit wear and newsletters. Students interested in business, writing, journalism, as well as graphic design (photoshop) have all succeeded in this division.

5. Sponsorship and Dues

In order to remain on the team, each member must raise a minimum of **$150** before the end of the preseason (December 3rd, 2015) at 3:20PM. We **expect** this money to be paid via **sponsorship,** not out of your parents pockets. Below are details of the process by which a sponsorship is obtained. In addition, further resources are available on the K-drive or by asking a divisional/team leader. Note: Competition costs are described in *7. Competition and Competition Costs*, as they vary year to year.

How to Obtain a Sponsor:

Obtaining a sponsor can take many different forms. Please visit the "Resources" tab under the TechHOUNDS website for access to a sponsorship flowchart, as well as sample emails and thank you letters. For your reference, a *basic* outline is provided below. Note that this is merely a framework for contacting a sponsor, rather than a detailed explanation - that can be found in the documents.

There are 4 major steps to take in obtaining a sponsor:

1. Finding a potential sponsor

Finding a potential sponsor is the easiest part of the process. In one of the initial preseason meetings, a list of sponsors that have given us money over the past 15 years will be posted on the wall. You can simply sign your name next to an unclaimed sponsor to secure your "rights" to it. However, **you must send an email to the PR Lead, Jackson Otto (techhoundssponsors@gmail.com) and receive a positive response before contacting the sponsor.**

You are also more than welcome to contact a company not on the list of previous sponsors. This could be a family member's business, a company you visit often, or even just a random place. Feel free to ask your parents for their own contacts that could be interested in sponsoring. **You still must send an email to the PR Lead, Jackson Otto (techhoundssponsors@gmail.com) and receive a positive response before contacting the sponsor.**

2. Establishing contact with the sponsor

If you do not personally know an employee of the company you are contacting for the sponsorship, we suggest going online and finding a phone and email contact. Send an email asking for a sponsorship [see template online], and if they do not respond within three business days, make a phone call. When sending the email, be sure to include the TechHOUNDS Sponsorship Form.

If you do know someone at the company, make a phone call asking for a sponsorship. If it is a close relative or family member, try talking to them in person, if possible.

Note: A parent or grandparent paying cash is not considered a sponsorship. It must be through a company. If a family member owns a company, the company providing money *would* be considered a sponsorship.

3. Convincing the sponsor to provide money

Convincing a sponsor to provide money ranges in difficulty. Generally, it is *much* easier if you know an employee at the company - even easier if you know the owner. If this is the case, appeal to your relationship with the potential sponsor while talking about what TechHOUNDS provides.

If you do not know the person you are asking for the sponsorship, please refer to the General Team Information document on the website. This has basic information on what TechHOUNDS, FIRST, and FRC are and what they provide to individuals and the community, if your contact has any questions.

Below is the general format for an email or phone call [More detailed information and example emails can be found in the online documents entitled “Phone Call Guide” and “Sample Sponsorship Email]:

1. (1-2) Pleasantries
2. (1) Say the words “Seeking a sponsorship for the Carmel High School TechHOUNDS Robotics Team” -
3. (2) Basic description of what we do (build robots, inspire students)
4. (2) Discuss team outreach (Women in Technology Workshop, FIRSTEP Engineering Summer Camp)
5. Are you interested in sponsoring?

4. Following up with the sponsor

This is the **most important part** of the sponsorship process. After TechHOUNDS receives the money, you will be notified and asked to **send your sponsor a thank-you letter. Do not delay in completing this!** This is vitally important in maintaining a professional relationship and can result in ruining business partnerships if not done properly. Please see the website for thank-you letter templates.

After completing your letter, please bring a draft to the PR Lead (Jackson Otto). If there are any flaws, you will be asked to edit the letter. Once complete, you must deliver a clean copy to the team lead (Vikas Maturi) for a final check. After the letter has been approved, it must be **signed**

by the Team Lead (Vikas Maturi) and Faculty Coach (Zachary Bonewit) before it is sent out. Materials and instructions to send the letter are provided in the darkroom of the TechHOUNDS closet.

SRT Help Sessions: TechHOUNDS provides SRT help sessions to help rookie and veteran students with the process of obtaining a sponsorship. Team leaders and experienced veteran mentors will provide small-group or one-on-one help to students struggling to obtain a sponsorship. Ask the faculty leader for an SRT pass before the G1 period.

Financial Need: TechHOUNDS is 100% willing to make accommodations for families with financial insecurity, provided that the student has made a **significant effort to obtain a sponsorship and has demonstrated his/her need at least one month prior to the dues deadline**. This includes arranging a meeting with the team lead/faculty coach, discussing potential ways to obtain sponsorships, and taking clear steps to try to obtain multiple different sponsorships. For example, a student that could not raise $150 with an uncertain financial situation, but has actively sought out five separate sponsors and attended SRT help sessions would still qualify to remain on the team beyond the deadline.

6. Preseason and Build Season Scheduling

Preseason Important Dates:

- Thursday, September 3rd: Call-Out Meeting
- Thursday, September 10th: First Official Preseason Meeting
- Thursday, September 24th: APPLICATIONS DUE AT **11:03 AM. No Exceptions!**
- Saturday, September 26th: Women in Technology Workshop
- Thursday, December 3rd: Final Preseason Meeting - **$150 DUE. Exceptions ONLY for students with financial instability [described above].**

Preseason Meeting Times:

All Thursdays (except Thanksgiving): 3:20 PM - 5:30 PM (No Dinner Provided)

Build Season Important Dates:

- Saturday, January 9th: 2016 Kickoff
- Monday, January 11th: FIRST OFFICIAL BUILD SEASON MEETING
- Friday, February 19th: LAST OFFICIAL BUILD SEASON MEETING
- Monday, February 22nd: Parent's Night Open House
- Tuesday, February 23rd: Stop Build Day - Cannot Modify Robot

Build Season Meeting Times:

Monday, Wednesday, & Friday:

- 3:20 - 6:30 PM (Dinner NOT Served)

Tuesday & Thursday:

- 6:00 - 9:00 PM
- Dinner Served at 5:30 PM [Free]

Weekends:

- Saturday meetings ONLY if necessary

Holidays (NO Meetings):

- Monday, January 18th (MLK, Jr. Day)
- Monday, February 15th (President's Day)

7. Events (Outreach and Team-Building)

Outreach: TechHOUNDS engages in a variety of volunteering and outreach initiatives directed at bettering the local and national community. This includes providing a variety of demonstrations and workshops for local scouting troops, elementary schools, and festivals, launching conferences regarding STEM, and more. During the 2015-2016 season, TechHOUNDS will be focusing on creating a *Women in Technology Workshop* (September 2015) in addition to providing technologies and labor for organizations dedicated to supporting students with disabilities. We **expect** students to be actively involved in these outreach opportunities, but do not require participation.

Team-Building: TechHOUNDS incorporates a variety of team-building initiatives into the preseason in order to ensure that all students get the opportunity to know each other better before the build season. In addition to volunteering at outreach initiatives, students have the chance to participate in the following activities:

TechHOUNDS Annual Late-Nighter: This signature event hosted in November is the TechHOUNDS greatest team-building experience. Students get the opportunity to compete in a vast array of fun activities with different small teams, followed by a sports session and a free-for-all time with computers, gaming systems, and board games. This often makes a student's experience on the team, so make sure you can come!

Laser Flash/Etc.: TechHOUNDS hopes to incorporate more unofficial team-building activities in which students can get together and have some friendly competition. This may range from experiences like laser flash to random movie nights.

8. Competitions

Competition Overview: Competitions are by far the most excited and amazing part of the TechHOUNDS experience. Each attending team is crazy with support for their team. It's quite common for people to paint their faces (or bodies) with team colors, dance with mascot costumes, and cheer incredibly loudly at each victory - similar to a football game.

Each year, the TechHOUNDS choose a variety of competitions to attend at the discretion of the faculty leaders and the team leadership. These decisions are based on money, school missed for students and faculty, distance, hotels, time, and steepness of competition. As of 9/3/15, we do not know which competitions we will be attending.

Competitions generally consist of approximately 80 qualifying rounds and 20 elimination rounds. During the qualifying rounds, robots compete on teams of three (usually) against another alliance of three teams. These alliances are chosen at random and rotate throughout the rounds. During each match, teams will be given a score and ranked based on their score and other factors (different during each game). Each team generally plays approximately 10 matches during the qualifying rounds

At the conclusion of the qualifying rounds, the final team rankings are used to form eight alliances. The top-ranked team has the opportunity to pick **any** team; following their selection, the second-ranked team has the opportunity to pick any unpicked team. This continues until there are eight teams of two. Then, starting with the eighth-ranked team, each group of two will pick a third team to compete with, forming eight final alliances.

These alliances will then compete in head-to-head matches to determine a winner. The methods of choosing a winner vary year to year.

Competition Costs: We HIGHLY recommend that students cover travel costs by seeking corporate sponsorships for the team. Any sponsorship obtained at least two weeks in advance of a competition will cover the cost of that competition.

District Competitions/District Championships: FREE

- Students should bring $15-20 each day of competition in order to buy snacks/lunch from provided food vendors and/or concession stands.

Regional Competition: $150 (TBD)

- This cost covers hotel, transportation, and breakfast/dinner at the event.
- Students should bring $30-50 for extra snacks/lunch/souvenirs

International Competition: $300 (TBD)

- This cost covers hotel, transportation, breakfast/dinner, and admission to cultural destinations in St. Louis
- Students should bring $30-50 for extra snacks/lunch/souvenirs