



Team 1389 Mentor Handbook

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www.Team1389.org

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Thank you for your interest in becoming a Team 1389 mentor! Being a mentor can be a big time commitment and a lot of hard work, but is one of the most rewarding experiences you will ever have. This is a unique opportunity to give back in a very rewarding way.

Mentoring is the process by which an experienced person provides advice, support, and encouragement to a less experienced person. Adult mentors on Team 1389 share their knowledge and expertise with the students to help foster intellectual growth.

FIRST Robotics Competition (FRC) mentors play a vital role on the team. An effective mentor demonstrates the value of success they have achieved through their education and career, and uses their skills and successes to share knowledge and values with team members.

Team 1389 has both Technical Mentors and Non-Technical Mentors. Technical mentors work extensively with team members during the off season to build skills, knowledge and hands on experience. During the build season they help guide the team in the design, build, and fabrication of a functional robot for competition. Non-technical mentors help the team year round in their outreach, awards and communications efforts.

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

Team 1389 Mentoring Style

As mentors, it is our role to create and guide the culture of our team. There are many textbook definitions of mentoring but here's our boiled-down version. Mentoring means setting our students on a task without full and concise instructions so that they not only learn a topic but also discover how to learn in the process. Along the way, the mentors are there to ask probing questions and guide discussion. We lead the students through the necessary thought processes ***so that they can discover the solution for themselves.***

We are a resource for how-to's.

We are an extra set of hands.

We are guiding hands.

We allow safe failure.

We are a backstop.

Our efforts do not guarantee success, but if we are careful and diligent, we can drastically minimize the risk of failure. Our goal is to help the team achieve success in a fun learning environment where students lead the direction and strategy of the team while making sound, data-backed, engineering decisions. {If we let the students run open-loop, with zero guidance and they fail to build a functional robot by the deadline, we will have failed as mentors.}

Mentoring is not standing by and waiting to be asked to help. A key tenet of mentoring is guiding the students down the path to success.

To use a bowling analogy, when teaching a young child to bowl, we use bumpers to keep the ball out of the gutter. This lets them practice getting the ball all the way to the end without always landing in the gutter. Just because the ball gets to the end doesn't mean they score a strike. Quite the contrary - they often only get one pin. But in the process, the child learns the motions of bowling and pretty soon the bumpers go away and they are able to keep the ball in the lane. Building a robot is a lot like bowling. It takes practice to be good. It takes failure to be better. But if we get stuck in repeated failure just as we are starting to learn, we lose interest and walk away. Mentors are the bumpers that ensure the bowling ball gets to the pins.

An even more apt metaphor is river rafting. Imagine we are all on a rafting trip. In the beginning ("PreSeason Fall"), the adults are showing the students how to hold the paddles, how to look ahead for the rocks, how to communicate as a team, and how to choose a path ahead. The adults and students start paddling together. Some of the students are quick to pick up the techniques, but others struggle and need extra guidance.

As the trip progresses, the adults are able to rest their paddles and the kids are taking over, choosing the path and doing the bulk of the paddling.

As the rapids get more intense ("Build Season" and "Competition Season") and as the students' energy begins to fade or the mentors spot dangerous rocks ahead, the adults pick their paddles back up and provide the added boost of energy, skill, and guidance to steer around the dangerous spots.

The team works together to make it through the rapids and not sink. At no time are mentors stepping out of the raft, giving a smart "good luck" salute and saying they'll meet the students at the landing.

The mentors will always be in the raft with the students. In this way, we employ the "see one, do one, teach one" method. The mentor does the task first. The student then does the task (maybe several times) with oversight. Finally, (after lots of time and practice on their own) the student teaches a new student the task. This last teaching step cements the idea, often clarifying the trickier bits as they have to explain them to someone else. **Good mentoring eventually allows the mentors to rest their paddles and let the students lead the way.**

In line with *FIRST*, our philosophy is to use the design challenges and competition of FRC as a tool for teaching the engineering process. We are fundamentally an engineering organization. Along the way there are opportunities for students to dive deep in areas that interest them, explore new areas they may not have considered and to rise to the occasion and lead their peers.

Practical Mentoring Techniques

We understand that mentoring is an art that improves with experience, not a science that can be perfectly implemented from only a set of ideals. With that in mind, we employ many techniques for fostering the open and nurturing environment we wish to create and maintain. Some of those techniques include, but are not limited to:

- Socratic questioning:
 - By asking skillful questions, we empower students to find their own answers.
- Pro's and con's lists
- Natural consequences:
 - Mentors are encouraged to allow the natural consequences of a student's decision to occur. Discretion is advised when the mentor realizes that a particular student's decision may cause the entire team to fail or the time/cost is too great. In such a case, "natural consequences" may not be the best tool for the mentoring job, and the mentor should employ a more appropriate option to encourage and guide the student. Students should make such impactful decisions together as a team.
- Brainstorming sessions
- Voting

Interactions with Students & Other Mentors

Our mentors bring a variety of communication styles to the table. Team 1389 has room for these diverse styles and the strengths they bring. However, at no time is verbal abuse of a student(s) or fellow mentor(s) tolerated. Mentors who engage in such

behaviors will be counseled on ways in which they can improve their interactions with students and/or each other. Mentors who continue to behave in an unacceptable manner will be dismissed at the discretion of the Lead Coach 1.

Given the diverse nature of communication styles present, it is also important for us to discern when true verbal abuse has occurred versus a mentor enforcing a boundary with a level of firmness and directness that the student may not be used to. The coaches and mentors should always patiently strive to build a rapport with each individual student.

Sternness should be a red flag to the mentor that s/he perhaps needs to step away for a moment to cool down. At all times, we should remember that we are modeling the behavior we would like to see in our students.

Mentors make mistakes in their interactions with students, and students make mistakes in their interactions with mentors, and with each other, especially in times of stress. No adult is perfect, and how we respond and work to repair and improve is vastly important and what we want to model for the students.

Mentor Override

On rare occasions, the “Mentor Override” is a judiciously-used responsibility. The most obvious example of a necessary “Mentor Override” is a situation where safety is involved. Students might disagree with an override, but mentors will discuss the decision with them at a later, more appropriate time. The “foresight of adulthood” is a benefit that our mentors bring to the team, and the rare, though proper, judicious use of an override is an important tool for maintaining the well-being of the entire team.

Mentor Expectations

We know that mentors have families, jobs, and other important commitments outside of Team 1389. We ask that mentors properly inform us up front of how much time they think they will be able to contribute. There are many different ways to contribute to the team, and we will find something that will fit your schedule and interests.

Involvement may include anything from preseason sub-teams and meetings, to fundraising, to community service activities, to build season work. Mentors are asked to participate outside of build season whenever possible, as it helps with team-building and getting team activities done. The rewards of putting forth this commitment are plentiful!

Mentors are expected to:

1. **Let the students do the majority of the work.** Provide guidance for the student members in their efforts to solve problems without doing the work for them.
2. Help keep the student members productively engaged during meetings, build sessions, practices and competitions. Be willing to push the students a little bit when they seem to have stalled out.
3. Be fair in all judgment calls and equitably treat all team members.
4. Practice “See One, Do One, Teach One” with the student, then be a guide on the side.
5. Be open to constructive feedback. Working with students is an art that takes time to learn, and a growth mindset is a crucial asset in a potential mentor.
6. Understand and demonstrate [Gracious Professionalism](#).
7. Display respect and support for the Lead Coach 1 and their decisions.
8. Although children under age 13 and non-member students are discouraged from attending Team 1389 meetings (unless for recruiting purposes), we realize there are times a need may arise. If this occurs, those children who are in attendance must be with a parent or legal guardian at all times in the designated area. The parent or legal guardian is responsible for the behavior and safety of these non-member students.

Unacceptable behavior or blatant disregard for the mentor guidelines may result in a mentor being asked to leave the facility, event or competition. Repeated offenses will be reviewed by the Lead Coach 1 and may result in dismissal from the team.

“Parent Hat” vs. “Mentor Hat”

There are many challenges to mentoring. Having your own kid(s) on the team is one of those challenges. We strive to treat all of the team members equally. Not only does this mean no special preferences, no extra coddling, and not giving undue deference to their ideas or availability, but it also means supporting, striving to understand and guiding the students who are not your own. Additionally, they are responsible for managing their own communications with the lead coaches and other mentors.

This can be a tall order for a parent. We naturally know our own kids better than the other kids. Plus it can be difficult to not get involved in areas that involve our kids, but perhaps do not fall under our own mentoring umbrella. It is hard for any loving parent to fully succeed at this type of detachment, but for those of us who wear both a mentor hat and a parent hat, it's an important part of the process.

As mentors, we must work with each other to recognize these occurrences, accept feedback and do our best to minimize future occurrences.

Communication Expectations

Direct, open, straightforward and respectful communication between the mentors, coaches and parents is a key component of the Team 1389 culture.

Clear communication, open discussion of taking on tasks, reporting progress and announcing results is a logistical necessity. Projects taken on without communication cause confusion, redundancy and frustration. Neglecting to regularly report on progress or announce results also causes others to feel the need to pick up a task they perceive as “dropped”. We are our best as a team when we communicate and “check-in” with each other on a regular basis.

When any group of people gathers around a goal, there may be some disagreements and awkward moments. Many times minor issues can be simply resolved through a gracious and professional private discussion with the other mentor, coach or student member. Both the avoidance of assuming there is doublespeak or ulterior motives, and the act of giving the benefit of the doubt wherever possible are precious elements to good communication. Heated discussions make everyone uncomfortable, and out of consideration for the entire team, need to be removed to a private location.

If a mentor has a disagreement with a decision, direction, a personnel issue, or other issue that they feel needs to be resolved at a higher level, the mentor is to discuss this privately with the Lead Coach 1. The coach will work with the mentors until the issues

are resolved as appropriate. The mentor may not agree with the final resolution, but the coach's decision will be final, and mentors are expected to fully support the final outcome.

The success of a group hinges on healthy communication between all involved, particularly the leaders. We are all going to make mistakes, and promoting healthy communication, however difficult at the time, when those mistakes or misunderstandings happen is the Team 1389 culture we want to maintain.

Regular Meetings

Given the varied responsibilities of the mentors and coaches, and keeping in line with maintaining a culture of open communication, Team 1389 mentors and coaches keep in constant contact on Discord and sometimes meet in coach/mentor-only meetings throughout the year for brainstorming, planning, and in order to “check in” with each other on current progress or recent completion of tasks.

Shared Documentation

The team uses a shared Google drive to house all of our documents. All mentors are given access to this drive.

The programming subteam uses GitHub to house and share our robots code. Only programming mentors are given access to GitHub

Team 1389 Expenditures

We must adhere to our team’s given budget. Most purchases are done in batches through our purchasing spreadsheet system. The Lead Coach 1 reviews and places these orders.

Before a mentor makes a purchase on behalf of the team, the purchase must be approved by a lead coach.

In rare cases, a team member may make a purchase on behalf of the team. Those purchases must be approved in advance by a lead coach.

Guiding principles from *FIRST* :

"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."

"Encourage Gracious Professionalism®, a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community."

"Coopertition means competing always, but assisting and enabling others when you can. Coopertition involves learning from teammates. It is teaching teammates. It is learning from Mentors. And it is managing and being managed."

"Provide opportunities for students to learn classroom competencies through project-based challenges and student directed problem based learning."

"Expose students to new interests."

"Teach coding and the scientific method through hands-on projects."

"Apply math and science to real-world problems."

"Teach the engineering and design process through mechanical design and build."

"Integrate innovative skill building and strategic thinking."

"Create a community of collaborative problem-solvers."

"More than just robots."

As mentors, we are setting the cultural direction and path for the team. We lean on and rely on all mentors to carry the torch and message.

Youth Protection Guidelines

Team 1389 has adopted the following policies for the safety and well-being of its members. These policies primarily protect youth members; however, they also serve to protect coaches, mentors and parents.

Two-deep leadership is required during lab hours and at events. That means we must have at least 2 mentors/volunteers present who have completed the fingerprinting and background check with MCPS, and have completed MCPS' online Youth Protection training.

One-on-one contact between adults and youth members is prohibited. In situations requiring a personal conference, the meeting is to be conducted with the knowledge and in view of other adults and/or youth.

No one-on-one contact between adults and youth members includes digital communication. Adults should not have one-on-one private online communications or engage one-on-one in other digital activities (games, social media, etc.) that are unrelated to team activities with youth members.

Adults should copy another adult coach or mentor) in digital and online communication, ensuring no one-on-one contact exists in text, social media, or other forms of online or digital communication.

Team 1389 utilizes Discord for Team communication. Mentors can engage with team members in the public chat rooms.

The buddy system should be used at all times. It is a valuable safety measure and is strongly encouraged for all member activities. On outings or out-of-town trips, our team members will be encouraged to have a buddy and stick with that person. Buddies should know and be comfortable with each other, and team members are encouraged to self-select their buddies.

Inappropriate use of smart phones, cameras, imaging, or digital devices is prohibited. Team members, mentors and coaches will use cameras and other imaging devices responsibly.

Coaches, mentors, volunteers, and team members will always work to encourage and create a safe, comfortable environment for all participants.

Attire

Safety glasses and closed-toed shoes are required during build meetings in which members are working on constructing robotics or working with tools. Safety glasses are provided.

Long hair must be pulled back when using power tools. Hair bands are provided in the lab.

Resource Links

- *FIRST*: Main website for *FIRST*. Includes information about all *FIRST* programs, important dates, registration links, and documents for download.
 - <https://www.firstinspires.org>
- *FIRST* Chesapeake: Website specifically for Maryland, DC and Virginia teams. Good resource for local competitions and outreach opportunities.
 - <https://www.firstchesapeake.org/>
- The Blue Alliance: Good source of information about teams including competition stats, contact information, and archives of videos of previous years' competitions.
 - <https://www.thebluealliance.com>
- Chief Delphi: discussion forum used to discuss the *FIRST* Robotics Competition. You will need to create an account to join the discussion. Good resource to learn from other teams.
 - <https://www.chiefdelphi.com/forums/portal.php>
- *FIRST* Mentoring Guide: this is a good introduction to the fundamentals of mentoring. Please refer to it for additional information.
 - https://www.firstinspires.org/sites/default/files/uploads/resource_library/frc/team-resources/frc_mentor_guide.pdf

*Credit to Team #6377 Howdy Bots, whose handbook served as the base for this guide.