

VEX IQ Coaches Training Introduction

Thank you for your interest in providing students with an opportunity to experience the inspiration, excitement, and learning that comes from participating in the VEX IQ Challenge. You don't have to be an engineer or have technical skills to coach a VEX IQ Challenge team. Just use the following resources to help your team get started in enjoying an amazing learning experience in the VEX IQ Challenge.

Getting Started

Download manuals, tutorials, and build resources: Visit our website for links to all sorts of resources at <https://www.jenisonrobotics.org/team-resources/>

Learn the Robot Game rules: Your team should learn about the robot game rules and the Teamwork, Programming Skills, and Robot Skills Challenges by reviewing the Game Manual on the VEX IQ Current Challenge site:
<https://content.vexrobotics.com/docs/viqc-next-level/VIQC-NextLevel-GameManual-20180817.pdf>.

Get the official VEX IQ App for your phone: Information for VIQC Hub app here
<https://www.vexrobotics.com/vexiq/competition/viqc-hub>

Explore the STEM Research Project: The focus for this project is to have students learn about the relationship among the STEM fields of science, technology, engineering, and math. Each season one of the fields will be featured providing the students with an opportunity to learn more about how it relates to robotics and how what they are learning in the classroom has a practical application in their lives. The team then shares their findings in a four-minute video presentation to event judges. This is an optional challenge, but participation is encouraged for advanced teams. For more details on the STEM Research Project, please visit:
<https://www.roboticseducation.org/documents/2018/07/stem-research-project-presentation-2018-19.pdf>

Participate in the Forum: For answers to general, as well as technical questions, and to collaborate with the VEX IQ community, visit www.vexiqforum.com/. Registration for the VEX IQ forum is free.

Working With Your Team - *“Think. Do. Test. Document Everything.”*

Plan Your Team Practice Schedule: We have our league nights on alternate Mondays starting in October. Most teams will use the other Mondays for practice, and probably add another night as well some weeks, especially at the beginning. We have 2 rooms available to us at the JIA, preferably used from 6PM - 8:00PM weekdays, but have access anytime. We have assigned practice nights, do not change these without notifying me first. As these are younger students, limit practice length to not more than two hours.

Important notes: Kids are not to roam the school, or play in the playground, and horseplay of any sort is not permitted. Also any electronics, other than the the computer to program the robot, are not permitted at any Jenison Robotics Event. Any student that can't follow these rules, may be asked to leave the program.

Plan Your Team Practices: The goal of the robotics program is to teach the students the design process, to create solutions for identified problems, and document the process. The “Think, Do, Test” process is a cycle that generally starts with a problem and ends with a solution. Start by sitting them down, and have them come up with ideas for each task you want the robot to do. Then have them build their ideas, and test them. As they do this, make sure each idea, and their results are noted in their Engineering Notebook.

Now, is the problem fully solved? In testing, if you conclude the problem is not fully solved, then the team has something more to think about. This means you write down or draw your next problem (that you see in testing) and repeat the cycle until your problem is fully solved. Always keep in mind that problems ARE NOT failures. They are an expected part of the design process!

Develop a Team Identity Developing your team identity can be a valuable, fun part of the team building process. Your team members should use their creativity to establish their own unique identity. Developing a team identity can include choosing a team name, creating displays for your pit (practice area) space for tournaments, maybe even designing a team logo, or creating a team cheer or song.

Constantly Brainstorm After your team learns more about the season's challenge, the members will be very excited to build the robot! Encourage your team to use that energy and excitement, plus their knowledge and skills, to first brainstorm their game strategy and the designs that can best be used to solve the VEX IQ Challenge. Your team can investigate various brainstorming processes and choose the one that works best for them. One great resource is YouTube - many teams from around the world post videos of their robots in action there. Share some of these videos with your team to help them come up with ideas!

Design the Robot Before your team designs their robot, make sure that they carefully review the Game Manual, Inspection Checklist, and the Design Award rubric in the "Team Resources" on the VEX IQ Challenge Site: <http://www.roboticseducation.org/competition-teams/vex-iq-challenge/>

Your team's robot design will likely change and evolve over the season, as their learning experiences progress. Encourage them to continually look for ways they can improve their robot design.

Document the Design Process *****VERY IMPORTANT***** Your team will use an Engineering Notebook to record robot design changes, their outcomes, and the learning involved in each change. One Engineering Notebook is provided in the Welcome Kit for each team, but you can use as many notebooks as you'd like!

It is important to also note, that this notebook is only to be done by the students, and parents/coaches should not touch it! The judges at the tournaments use this notebook as the basis of all award decisions.

There is a link on our website to a design notebook that won the World Championship. Please look at it and use it as a template.

<https://www.roboticseducation.org/documents/2016/11/vex-iq-challenge-engineering-notebook.pdf>

Build, Test, and Improve the Robot After adequate brainstorming, research, and design, your team can start building a robot to solve the VEX IQ Challenge. Your team can then test and make improvements to their robot design. Only one change should be made at a time, so that your team can evaluate and document the impact of each change in their Engineering Notebook. Unexpected results can provide an opportunity for your team members to collaborate and use their critical thinking and problem-solving skills to improve their robot's performance. **IMPORTANT NOTE:** *Make sure it is the students that are the ones to design/build/program the robot, not the parents or coaches... This cannot be stressed enough!*

Programming the Robot In addition to driving the robot to solve challenges, your team can program the robot to complete tasks by using programming software and sensors. Your team can then enjoy testing their skills at an event in the Programming Skills Challenge and documenting their learning process in the Engineering Notebook. To learn the basics of programming the VEX IQ robot, have the students visit: <http://curriculum.cs2n.org/vexiq/>. This can be a good "homework assignment" on the first day!

- One note, the robots come "pre-programmed" to "just work" if you build the starter "Clawbot", instructions for which are included with the kit. This is often a good starting point for a team, and they can then modify this robot any way they like, and this takes pressure off learning the programming right away.
- We also have a one page "Programming Cheat Sheet" that can be found here: <http://www.jenisonrobotics.org/resources/Forms/VEX-IQ-Programming-Steps.pdf>

Leagues/Tournaments

Leagues Every Jenison VEX IQ Team will be in one of three Monday Evening Leagues. These leagues run for 4 weeks, bi-weekly, with 2 of the leagues occurring at the Jenison Jr. High, and one at the Grandville Middle School. These leagues will have teams from Grandville and Hudsonville as well, with each organisation splitting their teams equally between the 3. Leagues run from 5:30PM-8:30PM, and we will need parent help to setup, and staff the league nights.

The first 3 weeks are “seeding rounds” and the last “league night” will be that leagues “Championship Tournament”. During the first 3 weeks, there will only be “Teamwork Challenge Matches”, but on the 4th week:

- not only will there be a runoff to decide the “Teamwork Champions”,
- but there will also be a “Robot Skills Challenge” competition,
- and each team will be individually judged for their Design Process, where they will be interviewed by a team of judges. Their Engineering Notebook will be evaluated by the judges as well for consideration for the “Excellence Award” which is the highest award a team may receive at any tournament. The Excellence Award is given to the team that excels in all areas, a good design process, a good engineering notebook, and they have a robot that performs well at both the Teamwork and Skills Challenges. Their interview skills and STEM Project will is also taken into consideration for the “Excellence Award”.
- There may be additional awards, like a “Judges” or “Design” award offered as well
- The 2 teams that win the “Teamwork Challenge” and the one “Excellence Award” winner from each league is automatically qualified for the State Championships!
- Any of the other awards *do not* qualify teams for the State Championships, however there are always a few extra spots available to the teams that do well in the “Robot Skills Challenge” For the top teams in the State that don’t win an automatic entry from any tournament, there will be spots available at the State Championships, that will be filled by the top scoring “Robot Skills” teams in the State. Last year several Jenison teams were invited to the State Championships based on their “Robot Skills’ scores. An up to date ranking for the State (and World!) can be found here <https://www.robotevents.com/robot-competitions/vex-iq-challenge/standings/skills>

A complete schedule of the league nights (and tournaments) can be found on our website at <http://www.jenisonrobotics.org/calendar/>

What to Expect at a League Night

Here are a few suggestions to help you get ready:

- Be early, and get your team table setup and your robot checked in right away. The robots have to be inspected, and if they don’t pass inspection, they can’t compete... better to give your team time to make any last minute changes
- Make sure all batteries are charged ahead of time!
- Bring snacks, but be aware there may be rules as to where they can be consumed. Don’t bring messy/sticky snacks, you don’t want those on your robots...
- It is going to be loud, and can be chaotic. Please help keep things calm.
- Keep the kids in the room, except for bathroom breaks. There is no running or horseplay allowed, and no roaming the halls of the school. This also applies to any spectators as well.
- As always, electronics are forbidden, except for the computers used for the robot.
- Once you have your schedule, assign the kids right away that are going to run each match. Have the kids then find the robot they will be teamed up with to come up with a match strategy.
- Cheer your teams on, but there is no “Coaching” allowed during a team match. This can actually get teams disqualified. Let the kids do their thing!
- Also, judges and refs will be watching to see if coaches/parents are building or fixing the robots. Remember, only the kids are supposed to be building the robots.
- Please help with setup & teardown. We are all just volunteers.

What to Expect at a Tournament

Here is a sample schedule, which will vary for each event.

| Sample Schedule | |
|----------------------|--|
| 8:00 a.m. | Team Check-In, Robot Inspection, Submit Notebooks, Judging |
| 9:00 a.m. | Driver's Meeting for All Team Members |
| 9:30 a.m.-12:00 p.m. | Robot Challenge Matches and Judging |
| 12:00-1:00 p.m. | Lunch |
| 1:00-2:30 p.m. | Robot Challenge Matches and Judging |
| 2:30-3:00 p.m. | Finals Matches and Awards |
| 3:30 p.m. | Practice Area (Pits) Close |

Tournament days are busy and fast-paced. Here are a few tips to help teams enjoy the day:

- Make sure your team is well rested and well hydrated. Bring snacks that are non-perishable.
- Dress comfortably and wear closed-toed shoes. Wearing team shirts or costumes adds to the fun.
- Ensure your robot is charged and ready for action!
- Make sure all equipment and parts are labeled with your team/contact name or team number.
- Arrive a few minutes early, if possible, and become familiar with the event venue.
- Ensure that an adult associated with the team supervises the students throughout the event.
- Do not leave personal or valuable items, such as your computer, unattended at the event.
- Review the event agenda and match schedule. Make sure the students know their team number.
- Assign a timekeeper, who ensures the team arrives on time for their matches and presentation.
- Encourage your team to interact and share with other teams to enhance their learning experience.
- Demonstrate courtesy and respect to the dedicated event staff and event participants at all times.
- Offer positive support and encouragement throughout the day.
- Share your team spirit! HAVE FUN!

For updates all season long, follow:

- Our Website at: <http://www.jenisonrobotics.org>
- Our Facebook Page at: <https://www.facebook.com/jenisonrobotics/>
- Our Twitter Feed at: <https://twitter.com/JenisonRobotics>

Contact Info Feel free to contact me anytime with questions, comments, suggestions, and concerns!

Raimo Karhunen
VEX IQ Director
Email: IQDir@jenisonrobotics.org
Phone: (616) 799-7527