

Main Event: VEX IQ Robot C Challenge

Event Description:

Teams of 2-4 students will create a robot, using the **VEX IQ kit provided**. On the day of competition, they will write Robot C line code that will allow the robot to navigate a course that will be revealed at the event.

Common Core Standards and 4C's:

Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own ideas clearly and persuasively. Creativity, Collaboration, Communication and Critical Thinking.

Designing and Programming your Robot:

Design Specifications:

Your robot will need to be able to navigate a course consisting of the following:

- Forward motion
- Backwards motion
- Right turns
- Left turns
- Spins

Additionally, the robot needs to be able to sense an obstacle using a front-mounted touch sensor. The robot should be able to execute a reverse command immediately following contact with an obstacle.

Course Layout:

On the day of the event, students will have a course design assigned to them. The course will be modular and variable yet will always have the same elements. Students should expect a series of segments that require forward motion, right turns, left turns, and moving in reverse. The course will have a stationary wall that requires a bump-sensor response. Upon bumping the object, the robot will proceed to a final home base and execute a 360-degree spin.

Technical Requirements:

- Vehicles must be constructed **entirely with VEX IQ pieces from the district purchased sets**.
- The robot should be of a size that can easily navigate the corners and turns in the course. Those areas are approximately 24" wide.
- The robots may only be controlled by writing Robot C line code.
- Time will start as soon as the course is revealed.
- Teams must complete the challenge in 20 minutes or less.
- ONLY registered students are allowed to touch the robot and computer that is used. (If a situation such as laptop failure arises, then the coach can inform a contest official and receive approval before entering the team competition area.)
- Live student problem-solving is the spirit of this competition.

Scoring:

Scores will be a combination of the points awarded from successfully completing segments of the course AND from the time it takes to finish.

| | Max | Formula |
|--|------------|--|
| Arriving at bump point | 10 | |
| Arriving at home base | 10 | |
| Executing a 360-degree spin in home base | 10 | |
| Time from start of programming until end of task | 40 | First Place Time / Team's Recorded Time x 40 = Team's TOTAL TIME |
| Points from Design Document | 30 | |
| TOTAL POINTS | 100 | |