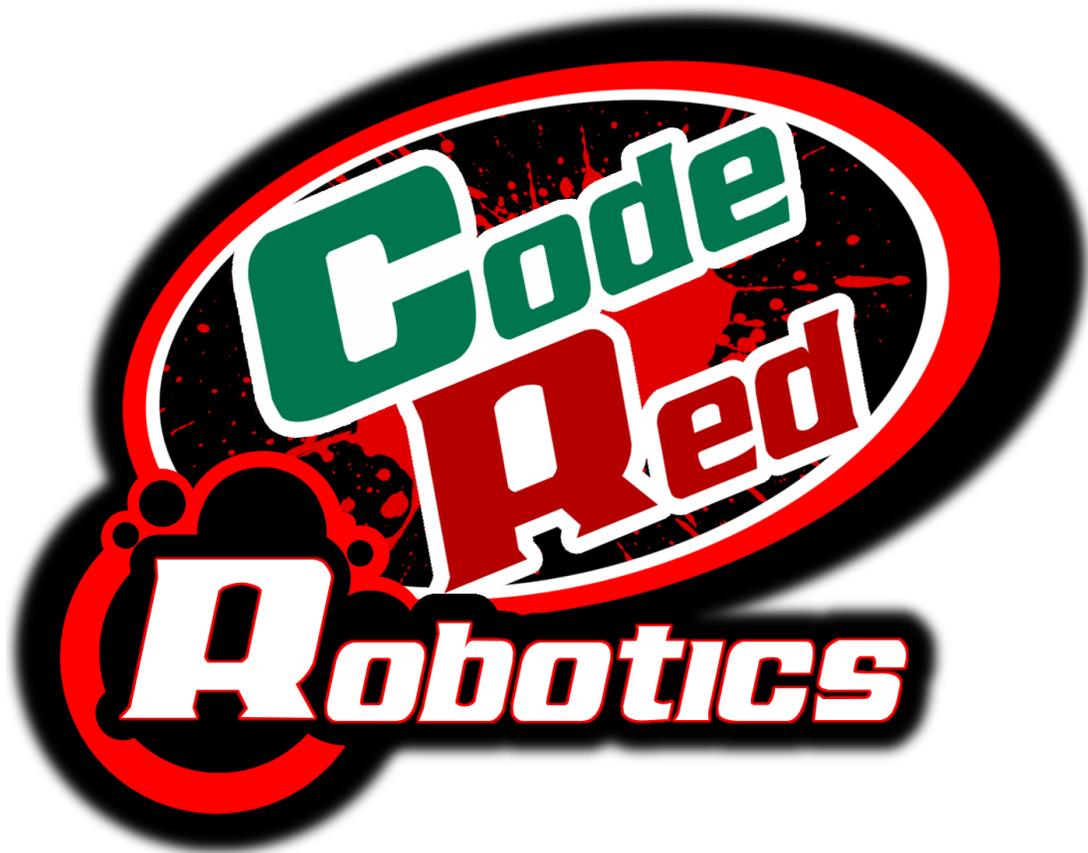


NRG

Next Robotics Generation

CUBE CHAOS



Building Robots to Build Better People

Code Red Robotics

Presents:



Grades 4 - 6

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Introduction:

What is NRG?:

NRG is a collaboration of FRC (FIRST Robotics Challenge) teams who are creating a program to educate young students in the field of robotics. In NRG, we strive to get young minds interested in STEM to lead the way to a better future. Code Red Robotics founded the NRG program in 2015 to fulfill these goals.

In NRG we use small Arduino robots that we program in C++. The robots are controlled wirelessly from an Android Phone or from a logitech controller via bluetooth. Each student will receive their own robot at the beginning of the season that they will build, program and compete with. We will be asking the parents to participate and help their child in this amazing program. Not only is this a great opportunity to learn more about science and technology, it is also a bonding experience for both the parent and child. We also hope the NRG program will better prepare students for the FTC program when they reach middle school. Our goal is to learn new skills that participants will be able to apply in their future, because Code Red is about **Building Robots to Build Better People.**

NRG'S Core Values:

~Teams always apply good sportsmanship and are always gracious no matter what happens.

~We act with integrity.

~We have fun! =D

~We are a welcoming community of students, mentors, and volunteers. What we learn is more important than what we win.

~We respect each other and celebrate our differences.

~Students and adults work together to find solutions to challenges.

~We honor the spirit of friendly competition.

~We behave with courtesy and compassion for others at all times.

The Tournament

Overview:

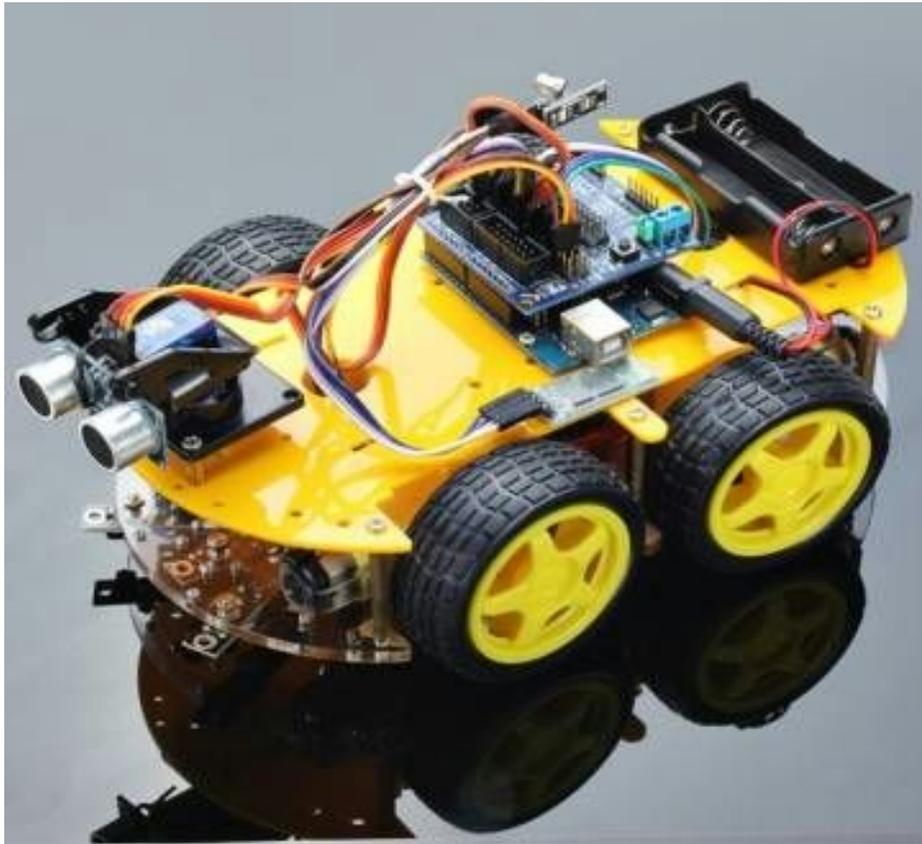
The NRG tournaments will feature friendly competition between teams over the course of two evenings. During these competitions teams will be given the chance to display the features of their robot.

Teams:

A team consists of a student, a mentor and a robot. During the competitions the student will be required to drive the robot, but the adult mentor is permitted to go up and coach if it is deemed necessary by the two as a collaborative group. Each team will be given an Arduino Robot Kit that they will use during the season. Computers for programming will be provided for each team to use while at the Code Red Build Space.

The Robot:

Each team will be given a kit containing the parts for the basic Arduino robot. The student and their parent/guardian will work together to assemble the robot. Students will be allowed to customize it with decorative and/or functional pieces. Please check the permitted materials list before adding anything to the robot. The robot must be no more than 12½ in. long.



Robot Inspection:

Before a team is allowed to compete, they will be required to go through hardware and software inspections. This is required to make sure everyone is following the rules and meets safety guidelines.

Hardware:

During hardware inspection, the inspector will ask a student a series of questions and make sure that their robot made to specifications and is safe for both spectators and drivers. They will measure the robot to make sure it is within the size constraints. If the robot does not meet the rules, the team will be given a few minutes to rectify it. If the robot cannot be made right the team will not be allowed to compete in the tournament.

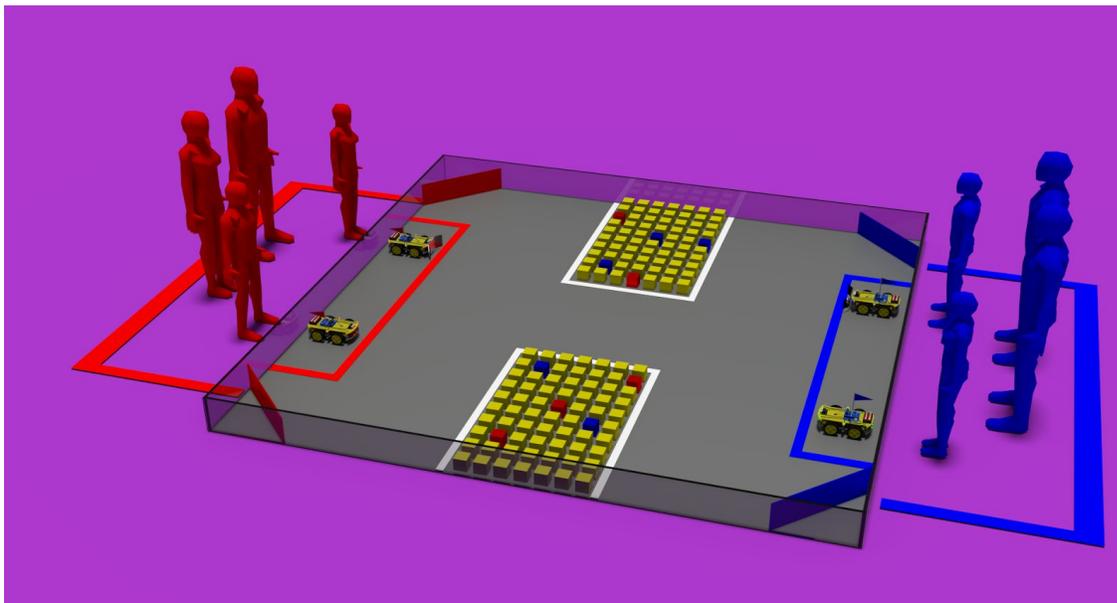
Software:

During software inspection, the inspector will make sure you are running the correct software, and they will look at your programs.

The Game

This year the NRG game is... *CUBE CHAOS!*

CUBE CHAOS will be played on a 8 foot by 8 foot field with small 4" by 4" cubes. The field will be divided into a Blue Alliance Section and a Red Alliance Section. In each section there will be a Floor Scoring Zone, into which cubes may be pushed to score points. There will be a 2 minute Driver controlled period during which teams work together with their alliance partner to score cubes in their respective alliance goals. After the 2 minutes are up we enter the end game. During the end game alliances have an additional 30 seconds to enter the opposing alliance's goal and steal blocks from inside.



Alliances:

During the competition teams will be assigned an alliance partner for each match. Alliances will be randomized for qualification matches. An alliance consists of two teams and we advise that you work together with your alliance partner to develop a game strategy. While you are on the field you can continue to communicate with your alliance partner and work together with them to score the maximum amount of points.

Remember that a team from the opposing alliance could be your alliance partner in the next round.



Rules:

~No part of the driver or coach is allowed inside the field after the match begins; the only time a driver is allowed on the field is when directed by the Head Referee prior to or following a match.

~Drivers must put down their controllers after the match has ended. Failure to do so will result in a 10 point deduction from the alliance score.

~In the event that a robot stops working during a match do not reach on to the field. Inform a referee and it will be handled accordingly.

~If a robot disconnects one of the pieces of another team's robot from the chassis, the offending team will receive a 5 point penalty from the latest match and must help them repair their robot.

~Any additional (non kit) part of the robot should not extend more than 2 inches past the original chassis.

(12 1/2" past the kit chassis)

~The adult coach is not allowed to touch the controls in any way during the match. Doing so will result in scoring no points for the match.

~A robot is not allowed in the opposing alliances scoring zone for more than 15 seconds and this is only permitted during the end game.

~Do not pin another robot. Breaking this rule will result in a 20 point penalty and a 10 point penalty for every 5 seconds the robot is pinned.

~ Driving into a opposing alliances scoring zone before end game is a 10 point penalty and five points every 5 seconds the robot is in the zone.

Scoring:

During the course of the game there are multiple ways to score points:

~Pushing a yellow block into the teams respective scoring zone. (5 points)

~Pushing a team alliance color block into the same color alliance scoring zone. (10 points)

~Stealing* an alliance color block from their specific color zone. (15 points)

*Stealing is defined by taking a block from the opposing alliance's scoring zone and placing it into your own alliance scoring zone.

Judging and Awards Criteria

~Placing Awards - The top 3 scoring teams will be given a placing award.

~Good Sportsmanship Award - To the team that shows the good spirit of NRG even in the face of losing.

~Most Robust Robot - Given to the team with the most robust robot

~Communications Award - To the team that always has a game strategy and who communicates with their alliance partners.

~Design Award - To the best designed robot.

~The Fluent of Speech Award - To the student who answers the judge's questions with the most detail and accuracy.

~The Mentor Award - To the mentor who helps their child by gentle coaching and gives the student as many opportunities as possible to do the work.

Acceptable Material List

This is the list of extra pieces that we allow to be attached to your robot. NRG will not be providing these pieces but if a team would like to purchase some and add them to their robot that is completely fine.

~Lego pieces (only building parts not motors, sensors, gears, or computer bricks)

~Duct Tape or other kinds of building tape.

(If a team would like to add a decorative to your robot please consult with a member of the Game Committee before purchase)

Sponsors



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BOSCH

Invented for life



Final Notes

So now that you know what you're doing..... Go build a robot! Have fun and remember that we are always...

***Building Robots to
Build Better People!***