



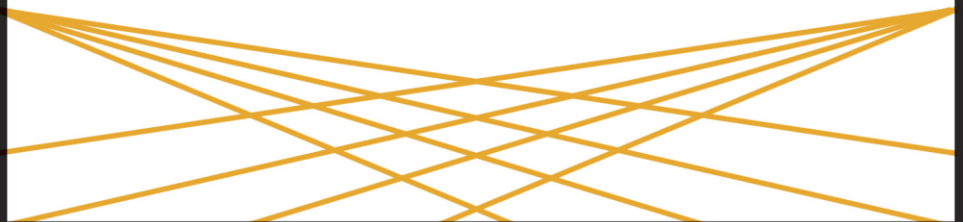
Kentucky State Championship

February 16th-17th
University of Kentucky | Lexington, KY

CENTERS STAGESM

PRESENTED BY  **RTX**

CREATE THE FUTURE
with big ideas and bold action as you
compete for a place in the spotlight
with this arts-inspired challenge.



About *FIRST*



FIRST
LEGO
LEAGUE

GRADES
PreK-8
AGES
4-14

FIRST
TECH
CHALLENGE

GRADES
7-12
AGES
12-18

FIRST
ROBOTICS
COMPETITION

GRADES
9-12
AGES
14-18

FIRST® (For Inspiration and Recognition of Science and Technology) was founded in 1989 to inspire young people's interest and participation in science and technology. Based in Manchester, NH, the 501(c)(3) not-for-profit public charity designs accessible, innovative programs that motivate young people to pursue education and career opportunities in science, technology, engineering, and math, while building self-confidence, knowledge, and life skills.

FIRST is More Than Robots.™ *FIRST* participation is proven to encourage students to pursue education and careers in STEM-related fields, inspire them to become leaders and innovators, and enhance their 21st century work-life skills.

About *FIRST* Tech Challenge

FIRST® Tech Challenge is an exciting, fun, global robotics program for students in grades 7-12. Teams are responsible for designing, building, and programming their robot to compete in an alliance format with and against other teams. The standard robot kit is reusable and can be programmed using a variety of java-based programming languages. Teams compete on and off the playing field for awards that celebrate robot design and performance, community outreach, *Gracious Professionalism*®, and sharing and spreading *FIRST* in their communities. Being on a *FIRST* team empowers students to:

- Think, explore, and project plan like scientists and engineers
- Have a fun, creative, and hands on STEAM experience
- Experiment, iterate, and overcome obstacles
- Apply real life math and science skills
- Build self-esteem and confidence
- 90% of participating students report learning how STEM can solve real world problems



Tournament Schedule

7:00am	Team Check-In, Pits Open
8:00 – 10:00am	Inspections, Judge Interviews, Practice
10:15am	Drivers Meeting
10:30am	Opening Ceremony
10:45am	Qualification Matches
12:15 – 1:15pm	Lunch Break
1:15pm	Qualification Matches Continued
3:30pm	Alliance Selection
4:00pm	Elimination and Final Rounds
5:45pm	Closing Ceremony
6:30pm	Pits Close

* Please note that the tournament schedule might have changed after this program book went to print. All times are subject to change. For any changes to the event's schedule, check in with Pit Admin.

ATTN High School Students!
And Some Middle School Students

**KY STUDENT
BOARD OF
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**APPLICATION
IS NOW
OPEN!!**

INFORMATION AND
APPLICATION AVAILABLE ON
OUR WEBSITE UNDER GET
INVOLVED!

www.kyfirstrobotics.org

Match Play and Elimination Rounds

During the Qualifying Matches

After all teams have gone through the robot and field inspections, they are randomly assigned into alliances of two teams. A team's alliance partner in one match may be their opponent in another match.

Team Rank

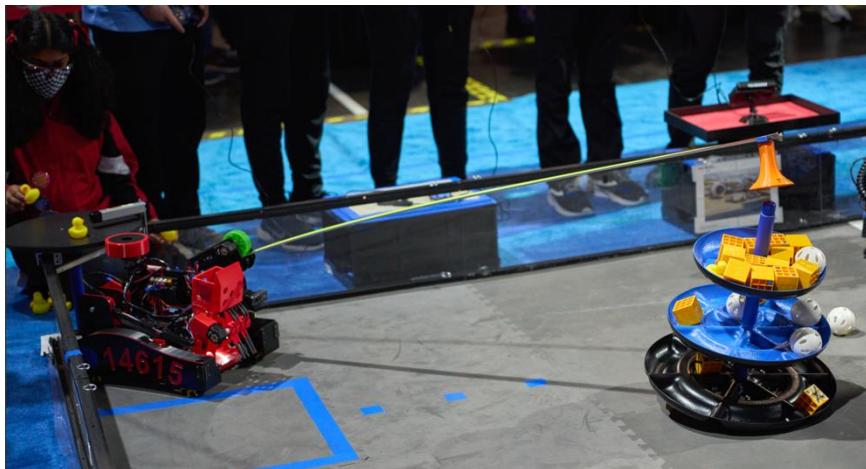
After all qualifying matches, all teams will be ranked from first through last based on their averaged Ranking Points (RPs). If multiple teams have the same number of ranking points, then the teams will be ranked based on their averaged tiebreaker points (TBP). There are two types of Tiebreaker points; TBP1 and TBP2. TBP1 is their alliances autonomous period score. TBP2 is the alliances end game score. If multiple teams have the same tiebreaker points as well, the teams will be ranked based on their highest match score. If this comparison still results in a tie, the next highest match score will be used until the tie is broken.

Alliance Selection

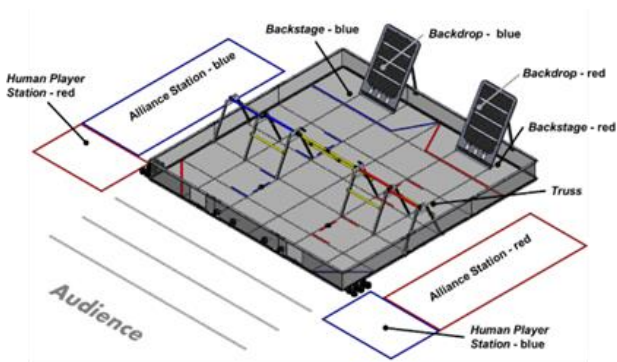
After all the qualifying matches are held, the Alliance Section begins. Four alliance captains are selected based on team rank. These captains then pick one or two additional teams (based on event size) to be their alliance partners for the Elimination Matches.

Elimination Matches

Alliances get a win, loss, or tie. The advancing alliance is the first one to win two matches.



Game Description



The Game:

CENTERSTAGESM presented by RTX is played on a 12 ft. x 12 ft. (3.7m x 3.7m) square field with approximately 1 ft. (0.3 m) high walls and a soft foam mat floor. There are two Alliances – “red” and “blue” – made up of two Robots each. Pixels are the Alliance-neutral scoring elements. There are 94 Pixels (64 white, 10 purple, 10 yellow, and 10 green). Four white Pixels are used as indicators for the Autonomous Period to direct the Robots to specific scoring areas. At the back of the field are two alliance-specific Backdrop and Backstage areas where robots score Pixels. Approximately midfield are four Trusses made up of Riggings and one Stage Door. In the front corners of the field are alliance-specific Wings where robots receive Pixels from the Human Player. There are six stacks of Pixels against the front wall of the field for Robots to retrieve and score. In front of the field are three Landing Zones where Robots will launch Drones.

Robots must traverse around the field under the Truss or through the Stage Door to access Pixels located against the front field wall. Pixels may also be placed by the Human Player into the Wings for Robots to access and score on the Backdrop or Backstage. There are different colors of the Pixels or the Robots to score Mosaics of three non-white Pixels in certain patterns.

Prior to the start of the Match, Robots must be touching the wall closest to their alliance station at specified locations and may possess up to two Pre-Load Pixels (one yellow and one purple) and their Drone. Teams may place their own manufactured Team Prop on the field directly in front of their Robot.

Matches have two distinct periods of play: a 30-second Autonomous period followed by a two-minute Driver-Controlled period. The last thirty

Game Description, continued

seconds of the Driver-Controlled period is called the End Game which adds new scoring opportunities for the Robots to achieve.

Autonomous Period:

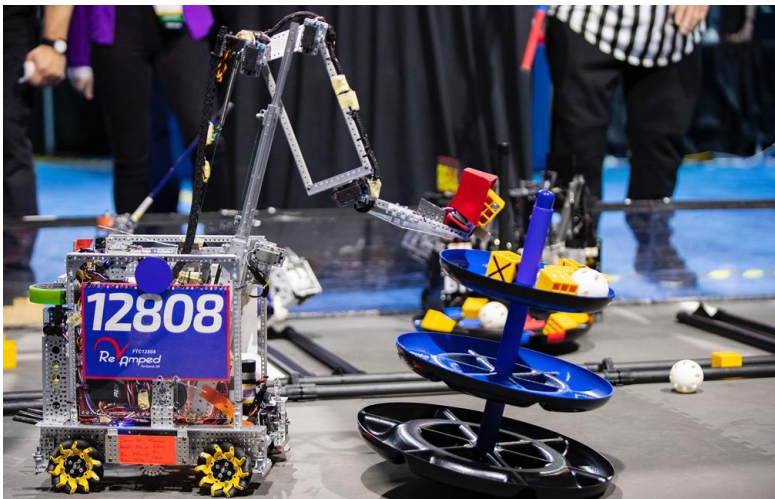
Robots may place Pixels in their corresponding Backdrop or Backstage closest to their Alliance Station. They can park in several locations at the end of the period for different points. Robots that can read the location of the Randomized Pixel and place their Pixel onto the correct Backdrop location earn points. Using their Team Prop to accomplish these tasks earns additional points.

Driver-Controlled Period:

Alliances earn points by scoring Pixels on their Backdrops or in their Backstage Areas. Mosaics on the Backdrop earn Artist Bonus points. Pixels crossing Set Lines on the Backdrop also earn Set Bonus points.

End Game:

Alliances may continue to score Pixels on Backdrops or Backstage. They may also launch Drones from their Robots over the Truss into Landing Zones in front of the Playing Field. They may also suspend their Robots from the Rigging connected to the Truss or Park their Robots in the Backstage for various points.



Scoring

Autonomous Period Scoring:

Navigating:

Parked In Alliance Backstage:5 points

Randomization Tasks based on white Pixel:

Purple Pixel in Spike Mark location: 10 points

Yellow Pixel in correct column on Backdrop: 10 points

Randomization Tasks based on Team Art:

Purple Pixel in Spike Mark location: 20 points

Yellow Pixel in correct column on Backdrop: 20 points

Pixels:

Placed in Backstage: 3 points

Placed on Backdrop: 5 points

Driver-Controlled Period Scoring:

Pixels:

Placed in Backstage: 1 point

Placed on Backdrop: 3 points

Artist Bonus: 10 points

Set Bonus:10 points each

End Game Scoring:

Robot Parked In Backstage: 5 points

Robot Suspended from Rigging: 20 points

Drone Launching:

In Landing Zone 1 (closest to the field): 30 points

In Landing Zone 2: 20 points

In Landing Zone 3: 10 points

Participating Teams

TEAM #	TEAM NAME	SCHOOL/ORGANIZATION	CITY, STATE
4444	Whitefield Robocats	Whitefield Academy	Louisville, KY
4537	DRSS Enterprise	Dayton Regional STEM School	Kettering, OH
4949	Warriors	Christian Academy of Knoxville	Knoxville, TN
6133	The "Nuts!"	Walnut Hills High School	Cincinnati, OH
8417	'Lectric Legends	Homeschool Team	Winchester, KY
11225	DELTA Robotics	Louisville Collegiate School	Louisville, KY
12611	TechNova	Community Team	Brentwood, TN
14727	Mind Power	Calloway County High School	Murray, KY
16515	Greenwood Green	Greenwood High School	Bowling Green, KY
18208	Trinity Titans	Trinity Christian Academy	Lexington, KY
18865	Will Power	Calloway County High School	Murray, KY
19228	Dragons	Warren Central High School	Bowling Green, KY
19841	RAMbotics	Raceland-Worthington High School	Raceland, KY
19989	Wings of Steel	FT Campbell High School	FT Campbell, KY
20694	Craft Coalition	Craft Academy for Excellence in Science & Mathematics	Morehead, KY
21623	Failing Formally	Homeschool Team	Paris, KY
22502	Heart Power	Calloway County High School	Murray, KY
22778	Portland Christian Robotics	Portland Christian	Louisville, KY
23626	Yet-To-Be-Named Robotics	The Learning Center	Lexington, KY
24127	Village School of Louisville	The Village School of Louisville	Louisville, KY
24199	MC Magic	Magoffin County High School	Salyersville, KY
24280	Greenwood Gold	Greenwood High School	Bowling Green, KY
24676	Those Titan	Trinity Christian Academy	Lexington, KY

FIRST Alumni and Scholarships

Participants and alumni of *FIRST* programs gain access to education and career discovery opportunities, connections to exclusive scholarships and employers, and a place in the *FIRST* community for life.



Learn more about scholarships, internships, and alumni opportunities at www.firstinspires.org/alumni. If you're a graduating senior, make sure to register in our dashboard so we can stay in touch!

To learn more about opportunities close to home, join our Kentucky Alumni database. We will share volunteer opportunities, internships, jobs and more! Register at www.kyfirstrobotics.org/alumni-1



FIRST Tech Challenge Awards

INSPIRE

The highest award that a team can be given. This judged award is given to the team that truly embodied the “challenge” of the program. The team that receives this award is a strong ambassador for *FIRST* programs and a role model team. This team is a top contender for many other judged awards and is a gracious competitor. The Inspire Award winner is an inspiration to other teams, acting with *Gracious Professionalism*[®] both on and off the Playing Field.

THINK

Removing engineering obstacles through creative thinking. This judged award is given to the team that best reflects the journey the team took as they experienced the engineering design process during the build season.

CONNECT

Connecting the dots between community, *FIRST*, and the diversity of the engineering world. This judged award is given to the team that most connects with their local science, technology, engineering, and math (STEM) community.

INNOVATE Award sponsored by Raytheon Technologies

Bringing great ideas from concept to reality. This judged award celebrates a team that not only thinks outside the box, but also has the ingenuity and inventiveness to make its designs come to life. This judged award is given to the team that has the most innovative and creative robot design solution to any or all specific field elements or components in the game.

CONTROL Award sponsored by Arm

Mastering robot intelligence. This judged award celebrates a team that uses sensors and software to enhance the robot’s functionality on the field.

MOTIVATE

Sparking others to embrace the culture of *FIRST*! This team embraces the culture of *FIRST* and clearly demonstrates what it means to be a team. This is a team who makes a collective effort to make *FIRST* known throughout their school and community, and sparks others to embrace the culture of *FIRST*.

FIRST Tech Challenge Awards, continued

DESIGN

Industrial design at its best. This judged award recognizes design elements of the robot that are both functional and aesthetic. All successful robots have innovative design aspects; however, the Design Award is presented to teams that incorporate industrial design elements into their solution.

PROMOTE (Optional Award)

“How I learned about FIRST” - This judged award is given to the team that is most successful in creating a compelling video message designed to change our culture and celebrate STEM.

COMPASS (Optional Award)

A beacon and leader in the journey of the team. This judged award recognizes an adult Coach or Mentor who has provided outstanding guidance and support for a Team throughout the year and demonstrates to the Team what it means to be a *Gracious Professional*.

ELIMINATION TOURNAMENT AWARDS

The winning alliance and finalist alliance are both recognized for their achievement in robot game performance.

GRACIOUS PROFESSIONALISM AWARD*

This award will be given to a team that has displayed gracious professionalism throughout the season, and nominated by at least one other team.

GREEN LEAF AWARD*

Proudly putting our planet first by using renewable materials on the robot. This award recognizes the team that has the highest percentage of renewable materials (any material that can be made in a human lifetime) on their robot as measured by volume.

MACGYVER AWARD*

This will go to a team that demonstrates quick, creative thinking in the moment and solves a challenge (or attempts to solve a challenge) with whatever materials are available at the time.

ROOKIE TOP FINISHER AWARD*

This award goes to the rookie team that finishes qualification rounds ranked the highest of all rookie teams.

ROOKIE ALL-STAR AWARD*

This award recognizes a rookie team that exemplifies *FIRST* values and the spirit of *FIRST* in their first season. All judging categories and robot performance will be considered.

GRACIOUS PROFESSIONALISM AWARD*

This award will be given to a team that has displayed gracious professionalism throughout the season, and nominated by at least one other team.

**Awards are KY State Awards only, and are not considered for Advancement*

**Thank You *FIRST* Tech Challenge
Season Sponsor!**



FIRST Values

Gracious Professionalism® — Dr. Woodie Flowers, *FIRST* Distinguished Advisor and Pappalardo Professor Emeritus of Mechanical Engineering, Massachusetts Institute of Technology, coined the term *Gracious Professionalism*.

Gracious Professionalism is part of the ethos of *FIRST*. It's a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community.

With *Gracious Professionalism*, fierce competition and mutual gain are not separate notions. Gracious professionals learn and compete like crazy but treat one another with respect and kindness in the process. They avoid treating anyone like losers. No chest thumping tough talk, but no sticky-sweet platitudes either. Knowledge, competition, and empathy are comfortably blended.

In the long run, *Gracious Professionalism* is part of pursuing a meaningful life. One can add to society and enjoy the satisfaction of knowing one has acted with integrity and sensitivity.

Coopertition® — *Coopertition* produces innovation. At *FIRST*, *Coopertition* is displaying unqualified kindness and respect in the face of fierce competition. *Coopertition* is founded on the concept and a philosophy that teams can and should help and cooperate with each other even as they compete.

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

FIRST Core Values

FIRST is committed to fostering, cultivating, and preserving a culture of equity, diversity, and inclusion that opens STEM opportunities for all. The *FIRST* community thrives under the set of *FIRST* Core Values:

Discovery

We explore new skills and ideas.



Innovation

We use creativity and persistence to solve problems.



Impact

We apply what we learn to improve our world.



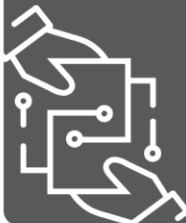
Inclusion

We respect each other and embrace our differences.



Teamwork

We are stronger when we work together.



Fun

We enjoy and celebrate what we do!



Thank You, Tournament Volunteers!

Andrew Gowan Angela Schanding Amelia Gowan
Amy Schwarz Anlyn Cornett Ann Combs Ben Poor
Brandon Gowan Brent Schanding Brian Gowan Cameron Drum
Cian Toole Dominic Hupp Dr. Bruce Walcott Dr. Rachel Rogers
Dr. Regina Hannemann Elaine Nelson Eric Adams Erin Combs
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Matthew Walker Michelle Cochran Palmer Cornett Paul Smith
Quinlan Toole Randy Cornett Robert Toole Rocky Tekulve
Rosemary Fama Seymer Antonio Sharon Hatton Sophie Smith
Tina Cornett Zachary Bratten

Thank you to all our additional volunteers whose names did not make it into the printed program!

Thank You, Sponsors!

Thank you to all who help make this program possible for our students. *FIRST* could not exist without the support of the army of mentors, parents, teachers, and volunteers who step up to provide their time and expertise to inspire our young people to get excited about science, technology, engineering, and math.

Your STATE Regional Sponsors



Local Tournament Sponsors



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