FIRST TECH CHALLENGE

FIRST DIVE
PRESENTED BY Qualcomm

Vermont Regional Championship

Saturday, February 8, 2025

South Burlington Union High School | South Burlington, Vermont

PRESENTED BY RTX

EXPLORE THE FUTURE

and go beneath the surface with this ocean-inspired challenge.

In this Program

About *FIRST*

FIRST® (**F**or **I**nspiration and **R**ecognition of **S**cience and **T**echnology) 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 again other teams. Using blocks-based or text-based coding and custom fabrication with 3D printing, teams program classroom-scale robots to follow autonomous commands before student drivers take control in two-on-two matches. 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

Event Schedule

7:00am	Team Check-In, Pits Open
7:30 – 10:00am	Inspections, Judge Interviews, Practice
9:00 am	Team Check-In Hard Deadline ***<Rule E105 Teams must check in>***
9:15am	Drivers Meeting
10am	Opening Ceremony
10:45am – 12pm	Qualification Matches
12 – 12:45pm	Lunch Break
12:45-2:15pm	Qualification Matches Continue
2:30pm	Alliance Selection
3:30pm – 5:30pm	Playoff Matches and Awards
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.

Match Play and Playoffs

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

During the qualifying matches, all teams will be ranked from first through last based on their Ranking Score (RS). The following table shows how teams are ranked in order:

Order Sort	Criteria
1st	RANKING SCORE (RS) – Average Ranking Points
2nd	Average ALLIANCE AUTO Points
3rd	Average TELEOP ALLIANCE ASCENT Points
4th	Highest MATCH Score (including FOULS)
5th	Random sort by the *FIRST* event management software

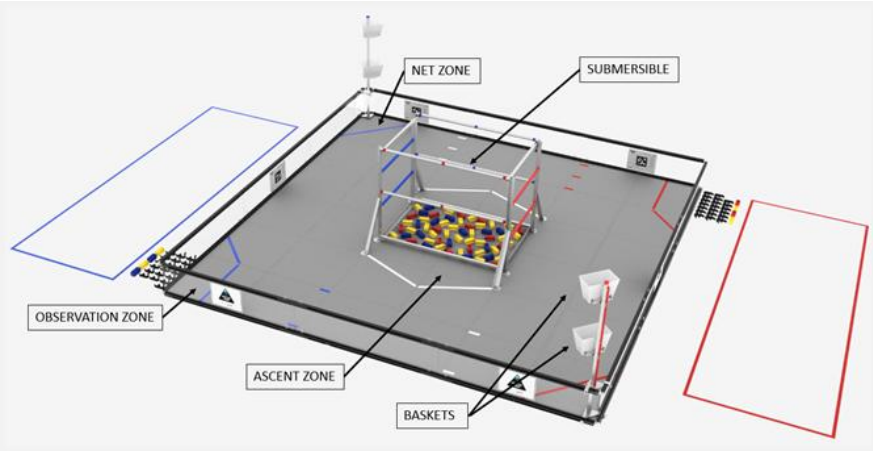
Alliance Selection

After all the qualifying matches are held, the Alliance Section begins. Up to eight alliance captains are selected based on the tournament size. These captains then pick one team to be their alliance partner for the Playoff Matches.

Playoff Matches

Alliances play in a double elimination style tournament which consists of an upper and lower bracket. Teams will face a new alliance each round until they have been defeated twice and are eliminated. The last alliance left standing is the event winner.

Game Description



The Game:

In INTO THE DEEP℠ presented by RTX, ALLIANCES collect deep sea SAMPLES to score in their NET ZONE or BASKETS, work with HUMAN PLAYERS to create SPECIMENS to score on the CHAMBERS of the SUBMERSIBLE and ASCEND from the depths before time runs out.

During the first 30 seconds of the MATCH the ROBOTS operate autonomously. The ROBOTS score SAMPLES in BASKETS or NETS, or SPECIMENS on the CHAMBERS.

During the remaining 2 minutes of the driver-controlled portion of the MATCH ROBOTS collect and sort SAMPLES from under the SUBMERSIBLE in the center of the FIELD. The yellow SAMPLES are scored in the BASKETS and the ALLIANCE SPECIFIC red and blue SAMPLES are returned to the OBSERVATION ZONE for the HUMAN PLAYERS to collect.

HUMAN PLAYERS can pick up SAMPLES delivered to the OBSERVATION ZONE and add a hanging CLIP to create a SPECIMEN. SPECIMENS can then be returned to the OBSERVATION ZONE on the FIELD where ROBOTS can pick them back up and score them on the CHAMBERS located on the SUBMERSIBLE.

As time runs out, ROBOTS can either PARK in the OBSERVATION ZONE or climb the RUNGS on the SUBMERSIBLE so they can ASCEND out of the deep.

The ALLIANCE that earns the most points wins the MATCH!

Scoring

Autonomous Period Scoring:

PARKED in OBSERVATION ZONE…. 3 points
LEVEL 1 ASCENT…..... 3 points
SAMPLE in NET ZONE……...2 points
SAMPLE in LOW BASKET……. 4 points
SAMPLE in HIGH BASKET……..... 8 points
SPECIMEN on LOW CHAMBER……6 points
SPECIMEN on HIGH CHAMBER…… 10 points

Teleop Period Scoring:

SAMPLE in NET ZONE…….... 2 points
SAMPLE in LOW BASKET……. 4 points
SAMPLE in HIGH BASKET……. 8 points
SPECIMEN on LOW CHAMBER…….. 6 points
SPECIMEN on HIGH CHAMBER…… 10 points

End Game Scoring:

PARKED in OBSERVATION ZONE….. 3 points
LEVEL 1 ASCENT…..... 3 points
LEVEL 2 ASCENT…..... 15 points
LEVEL 3 ASCENT…..... 30 points

Participating Teams

Number	Team Name	City
3397	HiveMind Robotics	Essex Junction
4946	Robo Raiders	East Montpelier
5741	RoboHawks Red	Hinesburg
6731	Ringers	Saint Albans
7418	Batteries Not Included	South Burlington
8304	Wired Cats	Saxtons River
9622	RMS Robotics	Rutland
9721	Green Mountain Gears	South Burlington
10899	Mansfield Mechanics United	Jericho
14251	Capital Robotics	Montpelier
16221	Manchester Machine Makers	Manchester
18649	Lancer Robotics	Hyde Park
18650	Cookie Clickers	Bennington
21577	Bulldog Robotics	Burlington
22683	RoboHawks White	Hinesburg
23742	Insufficient Power	South Burlington
24107	Trash Pandas	Westford
24782	Robo Raiders II	Montpelier
26726	Lamoille Robotics	Hyde Park
27360	Power Surge	South Burlington
27581	JV RedHawks	Hinesburg
28017	Winooski Middle/High School	Winooski

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!

FIRST Tech Challenge Awards

INSPIRE AWARD

The highest award that a team can be given. The team that receives this award is a strong ambassador for *FIRST* programs and a role model *FIRST* 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. This team shares their experiences, enthusiasm and knowledge with other teams, sponsors, their community, and the judges. Working as a unit, this team will have shown success in performing the task of designing and building a robot.

THINK AWARD

Removing engineering obstacles through creative thinking. This 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. The engineering content within the portfolio is the key reference for judges to help identify the most deserving team.

CONNECT AWARD

Connecting the dots between community, *FIRST*, and the diversity of the engineering world. This award is given to the team that connects with their local science, technology, engineering, and math (STEM) community. A true *FIRST* team is more than a sum of its parts and recognizes that engaging their local STEM community plays an essential part in their success. This team has a team plan and has identified steps to achieve their goals.

MOTIVATE AWARD

Sparking others to embrace the culture of *FIRST*! This team embraces the culture of *FIRST* and shows what it means to be a team. This team makes a collective effort to make *FIRST* known throughout their school and community and sparks others to embrace *FIRST*'s culture.

INNOVATE AWARD sponsored by RTX

Bringing great ideas from concept to reality. This award celebrates a team that thinks imaginatively and has the ingenuity, creativity, and inventiveness to make their designs come to life. This award is given to

the team that has an innovative and creative robot design solution. Elements of this award include design, robustness, and creative thinking related to design. This award may address the design of the whole robot or of a mechanism attached to the robot and does not have to work all the time during matches to be considered for this award.

CONTROL AWARD

The Control Award celebrates a team that uses sensors and software to increase the robot's functionality during gameplay. This award is given to the team that demonstrates innovative thinking and solutions to solve game challenges such as autonomous operation, improving mechanical systems with intelligent control, or using sensors to achieve better results. The solution(s) should work consistently during matches.

DESIGN AWARD

The Design Award celebrates the team that demonstrates industrial design principles, striking a balance between form, function, and aesthetics. The design process used should result in a robot which is efficiently designed, and effectively addresses the game challenge.

COMPASS AWARD (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*.

Playoff Tournament Awards

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

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:

Thank You, Tournament Volunteers!

Bevan Billstein
Scott McCalla
Liz Kenton
Mark Drapa
Danny Diaz
Angela Johnson
Damien Garland
Jeff Marvin
Judy McCullen
Kevin McCullen
Margaret Armstrong
Gary Miller
Guy Shaffer
Joe Eastman
Chris Kiegle
Douglas Parker
Heather Vernon
John Reilly
Petra Waterstreet
Samyak Harsh
Crawford Phillips
Joseph Chase

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.