FIRST® TECH CHALLENGE

VELOCITY VORTEX℠

2016-2017
FTC Alberta Championship

TELUS World of Science in Edmonton, Alberta

Hosting Sponsor

TELUS WORLD of SCIENCE Edmonton

Presenting Sponsor

DOW®

FIRST

FIRST LEGO LEAGUE JR. | FIRST LEGO LEAGUE | FIRST TECH CHALLENGE | FIRST ROBOTICS COMPETITION

Grades K-3 | Grades 4-9 | Grades 7-12 | Grades 9-12

Welcome to the *FIRST*® Tech Challenge

FIRST® Tech Challenge is designed for students in grades 7-12 to compete head to head, using a sports model. Teams are responsible for designing, building, and programming their robots to compete in an alliance format against other teams. The robot kit is powered by Android technology, reusable from year-to-year and is programmed using Java. Teams, including Coaches, Mentors and Volunteers, are required to develop strategy and build robots based on sound engineering principles. Awards are given for the competition as well as for community outreach, design, and other real-world accomplishments.

"...to create a world where science and technology are celebrated...
where young people dream of becoming science and technology leaders."
- *FIRST* Founder, Dean Kamen

About *FIRST*® Tech Challenge

FIRST Tech Challenge is an exciting and fun global robotics program that ignites an enthusiasm for science, technology and discovery in young people and teaches them STEM skills and concepts, principles of leadership, and how to work as a team.

The competitions are the result of focused brainstorming, dedicated mentoring, project timelines and teamwork. Paired with technical mentors, teams learn from and play with the "pros" to experience engineering problem solving first-hand.

- Entices kids to think like scientists and engineers
- Provides a fun, creative, hands-on learning experience
- Teaches kids to experiment and overcome obstacles
- The skills that they learn make math and science tangible, accessible and real
- Teams learn to document their design ideas and discoveries
- Builds self-esteem and confidence
- 90% of participating students report learning how STEM can solve real-world problems

Event Schedule - Saturday February 11th

8:00 - 12:00 .....Team registration, pit opens
9:00 - 5:00 ..... Inspections, practice matches
10:00 - 12:00 .....Judge presentation
12:00 - 1:00 .....Lunch
1:00 - 3:00 .....Judge presentation
3:30 - 5:00 .....Workshops for teams, by teams!
5:00.....Pit closes
5:00 - 6:00 ..... Dinner Event at Purple Pear *($)*
6:00 - 8:00 .....Car bulding & testing in The Science Garage *($)*
6:00 - 8:00 .....Angry Bird Universe Exhibition *($)*

Times are approximate and subject to change.

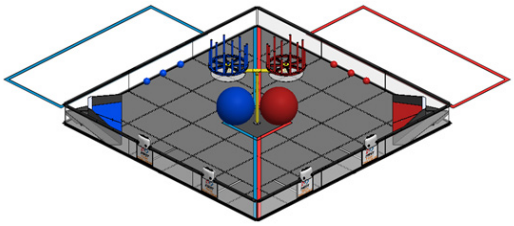
($) Preregistration is required to be part of this event. Offer only to participating teams.

Event Schedule - Sunday February 12th

8:00 - 8:30 .....Team check-in, pit opens
8:45.....Drivers' meeting, matches schedule distribution
9:00 - 9:30 .....Opening ceremony
9:30 - 12:00 ..... Qualification matches
12:00 - 12:30 .....Lunch
12:30 - 2:30 .....Qualification matches resume
2:30 - 3:00 .....Alliance selection
3:00 - 4:00 .....Elimination – Semi final rounds
4:00 - 4:30 .....Elimination – Final matches
4:30 - 5:00 ..... Award and closing ceremony

Times are approximate and subject to change.

VELOCITY VORTEX℠



The 2016-2017 Game:
VELOCITY VORTEX℠ presented by Qualcomm® is played on a 3.7m × 3.7m (12 ft. × 12 ft.) square field with approximately 0.3m (1 ft.) high walls and a soft foam mat floor. The field is divided diagonally into a "red" and a "blue" side corresponding to the two alliances. In the center of the field are two goals on a rotatable stand called the Center Vortex. Two ramps, each with a goal, called the Corner Vortex, are placed in opposite sides of the field. The Center Vortex Goals and Corner Vortexes are alliance specific. There are also four alliance neutral Beacons, two placed on each front wall next to the Corner Vortex. There are floor markings as well as Vision Targets placed on the field walls as reference points for robot navigation.

Alliance specific scoring elements for VELOCITY VORTEX℠ are five small balls called Particles and one large ball called a Cap Ball per alliance. At the start of a match, each alliance has three Particles available for preloading and scoring during the Autonomous period. Each alliance can earn up to two more Particles for use during the Driver-Controlled period by claiming Beacons during the Autonomous period.

Matches have two distinct periods of play: a 30-second Autonomous period followed by a two-minute Driver-Controlled period, the last 30 seconds of the Driver-Controlled period is called the End Game which adds new scoring opportunities for robots to achieve.

Autonomous Period:
During the Autonomous period, robots operate using only pre-programmed instructions. Alliances earn points by: claiming Beacons, moving the Cap Ball off of the Center Vortex base onto the field floor, scoring Particles into their alliance's Center Vortex or Corner Vortex. Alliances may also gain points by parking their robot in contact with the Center Vortex base or on the Corner Vortex.

Driver-Controlled Period:
During the Driver-Controlled period, alliances earn points by scoring Particles into their alliance's Center Vortex or Corner Vortex. Robots may also claim Beacons for their alliance by triggering them to illuminate their alliance color. There is no limit to the number of times that a Beacon may be triggered. At the end of the Game, the color of the Beacon determines the alliance credited for claiming it.

End Game:
The final 30 seconds of the Driver-Controlled period is called the End Game. In addition to the Driver-Controlled period tasks, alliances earn points by raising the Cap Ball off the playing field floor or by capping their Center Vortex with it.

Autonomous Period Scoring:	Points
Robot Parked partially on Center Vortex base	5
Robot Parked fully on Center Vortex base	10
Robot Parked partially on Corner Vortex	5
Robot Parked fully on Corner Vortex	10
Particle scored in Center Vortex	15 / particle
Particle scored in Corner Vortex	5 / particle
Cap Ball in contact with the floor	5
Claimed Beacon	30 / beacon

Driver-Controlled Period Scoring:	
Particle scored in Center Vortex	5 / particle
Particle scored in Corner Vortex	1 / particle

End Game Scoring:	
Claimed Beacon	10 / beacon
Cap Ball raised off floor but below 76 cm (30 in)	10
Cap Ball raised above 76 cm (30in)	20
Cap Ball scored in Center Vortex Goal	40

Participating Teams

Team	Team Name	School/Organization	City
3491	FIX IT	Community Team	Victoria, BC
4169	Beavers	Lacombe Composite High School	Lacombe
5009	Helios	École Maurice-Lavallée	Edmonton
8038	Flamin' Flamingos	Lillian Osborne High School	Edmonton
8287	Thurber 1	Lindsay Thurber Comprehensive High School	Red Deer
8289	Thurber 3	Lindsay Thurber Comprehensive High School	Red Deer
9555	JET.WAV	Lillian Osborne High School	Edmonton
10015	SWAT Bots Red	Community Team	Airdrie
10036	Tiger Terminators	Gilbert Paterson Middle School	Lethbridge
10325	Wilson Robotics	Wilson Middle School	Lethbridge
10544	Cyber Eagles	Strathcona Christian Academy Secondary	Sherwood Park
11352	United Robotics of Lacombe 2016	Lacombe Composite High School	Lacombe
11403	SWAT Bots Black	Community Team	Airdrie
11639	Opcom	Progressive Academy	Edmonton
11712	Aberhart Robotics Republic	William Aberhart High School	Calgary
11722	Real Virtuality	Community Team	Edmonton
11836	URL 2016-17	Lacombe Composite High School	Lacombe
11876	Techno Termites	École la Vérendrye	Lethbridge
11917	Sting Robotics	Fort Saskatchewan High School	Fort Saskatchewan
12055	Technar	Bishop Pinkham Junior High	Calgary
12094	TWOSE	Community Team	Edmonton
12137	Bentlee	Bentley School	Bentley
12204	Onoway LiveWires	Onoway Junior Senior High School	Onoway
12265	Gearheads	ADLC	Calgary
12336	Megatron	Bentley School	Bentley

Want to be part of FTC?

If you wish to joint a team, start a new team, help an existing team, or support the FTC Alberta organization, contact your FTC Partner at info@ftcalberta.ca or at 587-773-5425 to get started! You can also visit FIRST Website for more information at www.firstinspires.org. There are many ways to get involved, learn how now!

FIRST Tech Challenge Awards

Dean's List

FIRST Dean's List Finalists are outstanding student leaders whose passion for and effectiveness at attaining FIRST ideals is exemplary. These students were nominated by their teams for their direct contributions and impact on others exemplifying leadership and commitment, on their FTC team, in their school, and in their community. FIRST Dean's List Finalists, recognized here today, are also our nominees for the FIRST Dean's List at the Championship.

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.

Rockwell Collins Innovate

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.

PTC 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 PTC Design Award is presented to teams that incorporate industrial design elements into their solution.

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*.

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.

Think Award

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. The Engineering Section of the notebook is the key reference for judges to help identify the most deserving team.

Control

Mastering robot intelligence.

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

Elimination Tournament Awards

Mastering robot intelligence.

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

Match Play and Elimination

During the **Qualifying Matches**, teams 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: Teams will be ranked by their total Qualifying Points (QPs). If multiple teams have the same QP total, then they will be ranked by their Ranking Points (RPs). If multiple teams have the same RP total as well, then they will be ranked by their highest match score. If still tied, the next highest match score will be used until the tie is broken.

Qualifying Points: Teams receive 2 points for a win, 1 for a tie, and 0 points for a loss or disqualification (DQ).

Ranking Points: All teams in a match receive the score of the losing alliance before penalties unless they have a DQ (which gives that team 0 RP).

Alliance selection is held after all of the qualifying matches. 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. A competition with more than 20 teams will have alliances of three teams.

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

FIRST Values

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.

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, but assisting and enabling others when you can.

Team Advancement

Teams advance from the *FIRST* Tech Challenge Alberta Championship Tournament directly to the *FIRST* Tech Challenge World Championship in the order indicated below, according to the number of spots available. Alberta takes part in the Houston *FIRST* World Championship.

1. Inspire Award Winner
2. Winning Alliance Captain
3. Inspire Award, 2nd place
4. Winning Alliance Partner, 1st team selected
5. Inspire Award, 3rd place
6. Winning Alliance Partner, 2nd team selected
7. Think Award Winner
8. Finalist Alliance Captain
9. Connect Award Winner
10. Finalist Alliance Partner, 1st team selected
11. Rockwell Collins Innovate Award Winner
12. Finalist Alliance Partner, 2nd team selected
13. PTC Design Award Winner
14. Motivate Award Winner
15. Control Award Winner

Thank You!

Thank you to all who help make this program possible for our youth. *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.

Our Volunteers!

David Caron: Head referee
Dugal Caufield: Referee
Jean-Marc Cloutier: Field Technical Advisor
Marc de Montigny: Judge
Ronald Déry: Game announcer
Michel Gariépy: Field manager
Éric Gorsy: Scorekeeper
Serge Grenier: A/V & Streaming
Pierre Hébert: Control System Advisor
James Hryniw: Field Technical Advisor
Thomas Hryniw: Control System Advisor
Kevin Khan: Referee
Sébastien L'Abbé: Referee
Rock Larochelle: Registration desk
Nathan Liebrecht: Robot inspector
Robert Litchefield: Referee
Philippe Manseau: Tournament director
Sandra Manseau: Referee
Katherine McKinnon: Dean's List, Judge
Brian McLachlin: Judge advisor
Johanne Melançon: Registration desk
Modeste Messou: Photographer
Jean Mongrain: Judge
Vlad Pasek: Judge
Mike Silversides: Field Technical Advisor
Russell Weir: Dean's List

Our partners!

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TELUS WORLD of SCIENCE Edmonton

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Uniting Technology with Education

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