FTC Benelux Championship

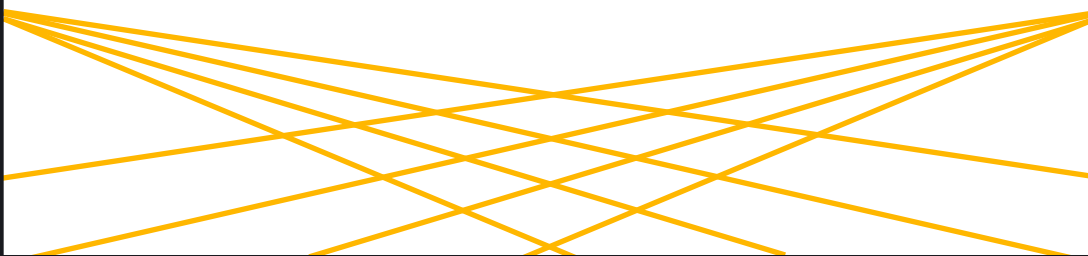## 24/02/2024
Hogeschoollaan 1 | Breda, Netherlands

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.

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.^SM *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. 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
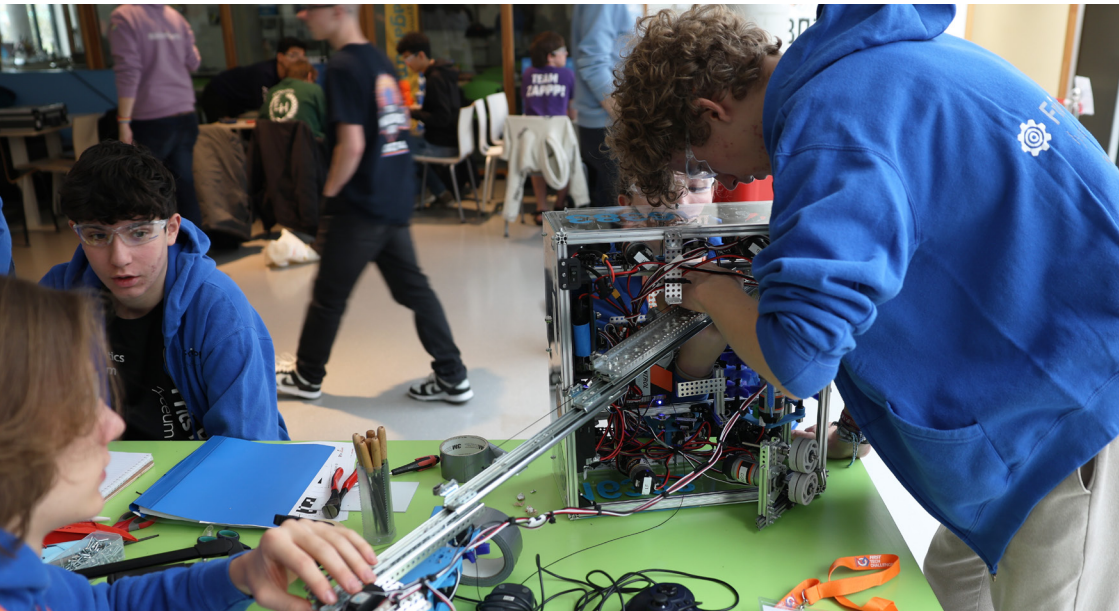
Tournament Schedule

8:15 - 8:45	Team Registration / Pits Open
9:00 - 9:15	Drivers Meeting
9:00 - 9:15	Coach Meeting
9:30 - 11:00	Inspections, Judge Interviews, Practise
11:00 - 11:30	Opening Ceremony
11:30 - 12:30	Qualification Matches
12:30 - 13:00	Lunch Break
13:00 - 14:30	Qualification Matches, Judging Pit Visits
14:30 - 14:45	Coffee Break
14:45 - 16:00	Qualification Matches
16:15 - 16:45	Alliance Selection
16:30 - 18:00	Diner
18:00 - 20:00	Elimination & Final Rounds, Award Ceremony (1)
19:30 - 20:00	Award Ceremony (2) and Closing
20:00 - 20:30	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 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.
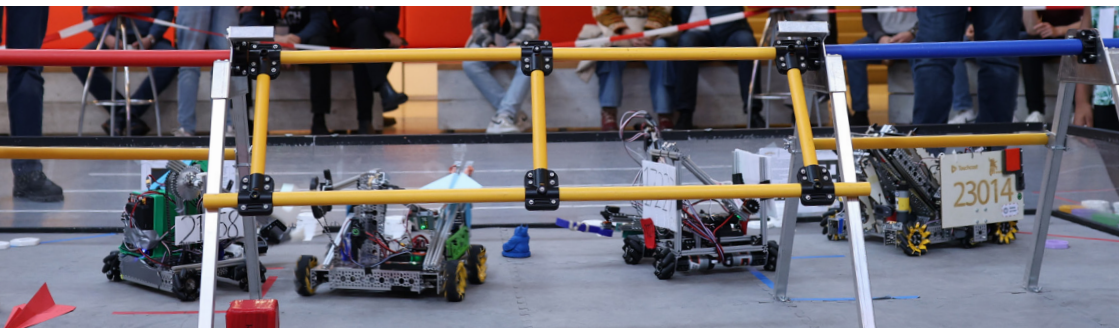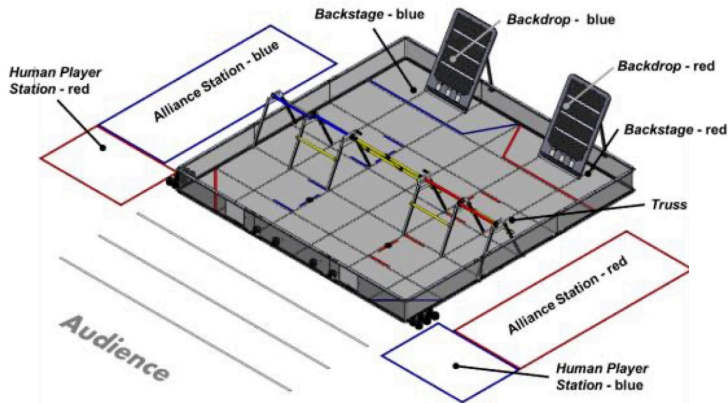
The Game

CENTERSTAGE presented by RTX is played on a 12 ft. x 12 ft. (3.7mx 3.7m) square field with approximately 1 ft. (0.3 m) high walls and a soft oam 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 oneStage Door. In the front corners of the field are alliance-specific Wings where robots receive Pixels from the Human Player. There are six stacksof Pixels against the front wall of the field for Robots to retrieve andscore. 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

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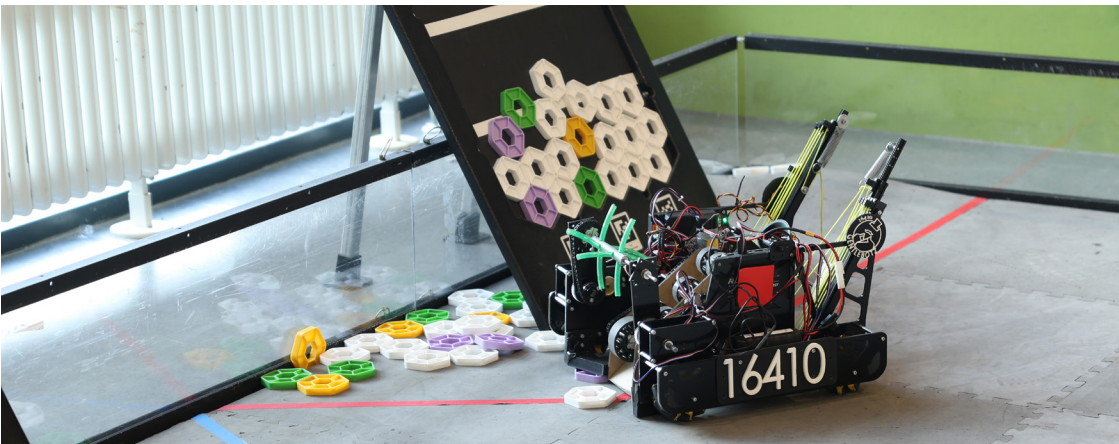
Autonomous Period:

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
3977	STT	Stanislascollege
10918	SPACE	Newman College
12819	Queen Bee	Zwijsen College
13953	STA	Stanislascollege
16382	Casimir Tech	Lorentz Casimir Lyceum
16383	Frits Philips Robotics team	Frits Philips College
16409	Orange	Newman College
16410	Gentlebotz	Newman College
16441	Pretty Smart Robotics	Family/ Community
16785	Probotix	Pius X College
16788	The Encrypted Gentlemen	Sondervick College
18425	Ubbo Tech Team	Ubbo Emius
19444	Lorentz Engineering	Lorentz Casimir Lyceum
20091	Blood Sweat and Gears	Maerlant Lyceum
20092	RTF - Robotic Tech Frox	Königin-Katharina-Stift
21658	Emmauscollege Thunder Wonder	Emmauscollege
22621	Byte Brigade	TISM
23390	Dazzling Duckies	Zwijsen College
23417	The Energizers	Wings Agora Roermond
23846	Aeres Green Tech Friesians	Aeres VMBO Buitenpost
24090	Trojan Robotics	American School The Hague
24145	ROBO-TECH	Family/ Community
24274	TechWizard007	Sint-Martinusscholen
24474	Lituanica Vilnius Lyceum	Family/ Community

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.

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
"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.

JUDGES CHOICE Award
The Judges Choice Award is given at the discretion of the Judges to a team they have encountered whose unique efforts, performance or dynamics merit recognition, yet the team does not fit into any of the existing award categories.

SUPPORT sponsored by the Gene Haas Foundation
This award and monetary support is for the team that the judges think can be a valuable addition to the team's budget for the purchase of materials.

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

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, butno 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

Andrei
Andy
Arne
Astrid
Ben
Bianca
Boudijn
Carlos
Cezar
Corné
Danique
Felix
Femke
Femke
Floor
Francesco
Frank
Gijs
Guus
Ine
Iris

Janouk
Jiri
Jochem
Joep
Julia
Jurgen
Karen
Koen
Laurens
Lisa
Lotte
Louna
Lucas
Mathijs
Merlijn
Nathan
Nigel
Radu
Ratna
René
Rob

Ronald
Roos
Stefan
Tessel H
Tessel M
Theo
Thomas
Ties
Tijn
Victor
Victor
Vladimir
Wouter

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.

FTC Benelux Sponsors

Local Tournament Sponsors