CRC ROBOTICS
JUNIOR AND SENIOR COMPETITIONS

INFORMATION

TAK TIK 2025

A program of

AEST EAST

Version 1.0

Foreword

i. Welcome to the CRC Robotics Competition

On behalf of the Educational Alliance for Science and Technology (EAST) and the team at CRC Robotics, welcome and congratulations to all the participants embarking on their CRC Robotics Competition journey! We hope to provide you with an experience you will remember for many years to come.

We wish to take this foreword to welcome and thank the many teachers, staff, parents, and mentors for embarking on this journey. For all the hard work you put in to enrich your students' lives throughout this season. A big thank-you to all the volunteers involved in CRC Robotics, whose dedication has allowed us to present you TAKTIK 2025.

In addition, we wish to acknowledge all our partners, without whom CRC Robotics could not exist.

Good luck to all and we will see you at TAKTIK 2025 on February 19-22, 2025 at St. Pius X Career Centre.

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ii. About CRC Robotics

CRC Robotics was founded in 2001 by a group of young professionals and teachers, fueled by their passion for robotics and education. Unsatisfied with the robotics competitions available for high schools and CEGEPs in Canada, they created an annual competition linking science, technology, engineering and mathematics (STEM) with computers, arts and languages.

We've since grown into an organization run by former participants working to give other students the chance to participate in their own CRC Robotics adventure. The Competition now welcomes elementary, high school and CEGEP teams from coast to coast in a 4-day, action-packed event held annually.

We believe in providing exciting learning opportunities to students with various interests and goals. A program under the Educational Alliance for Science and Technology (EAST), we hold events allowing tomorrow's leaders to find their passion and develop key skills that will serve as assets in an ever-changing, global world.

In essence, the CRC Robotics Competition is:

- A coherent body of several competitions, integrating different disciplines and unique challenges, including languages, computers, mathematics, science, art and much more;
- An experience that develops the qualities of a leader and teaches students about organization and teamwork, since everything is directed and performed by the students;
- An event that involves students from elementary schools, high schools, CEGEPs and professional vocational centers from all over Canada;
- A challenge that allows students to apply the theoretical knowledge gained in the classroom to a practical application in order to familiarize the students with technology outside of the classroom;
- A chance to take part in an extracurricular activity and work with students and mentors from different backgrounds and domains (engineers, technicians, university professors, etc.).

iii. Roles within the CRC Robotics Competition

In the CRC Robotics Competition, there are three different roles: students, teachers, and mentors. We have laid out the following responsibilities for each:

1. **Students are to do all the planning and building**. They should be creating the strategies, designing the critical paths, and controlling all aspects of the team. Any work done on any aspect of the Competition must be done entirely by the students.

2. **Teachers are available to provide the support that students may need, only if they need it.** They should not be directing the students, but instead, acting as advisors. If a student has a question, the teacher may point the student toward the answer or show the student how to find the solution. If a student is unsure of how to accomplish a specific task, the teacher may demonstrate, but any pieces attached to the robot are to be touched **only by the students**. However, we do realize that there may be times when an educator must step in for academic reasons. We believe that every teacher is a competent professional that can differentiate between teaching students how to do things and doing it in their place.

3. **Mentors are external professionals who may be consulted throughout the course of this activity.** Their job is to help with questions which exceed both the students' and teachers' knowledge. An engineer would have more practical experience; however, the engineer may not direct the students as they are acting only as an advisor.

We value the participation of your team, but always keep in mind that this is the students' project. Let them show you what they can do and let them develop their own skills! Their work is what truly matters and that is what makes the CRC Robotics Competition so unique and relevant.

iv. Our Partners

As part of our non-profit nature, as an organization we strive to keep registration fees for schools to the minimum required for us to continue operating. Helping ensure easy and equal access for schools from all socio-economic situations. However, this would not be possible without the help of our generous partners; that, year after year, help us ensure our continued ability to produce this wonderful program for the students.

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If you or your company would like to join our ever-growing list of partners, please reach out to EAST at natasha.vitale@sciencetech.ca. We are always seeking to establish new partnerships. On behalf of the students, and our organization a heartfelt thank-you!

v. Season Calendar

Item	Date & Location	Description
Information Sessions & Workshops **(Junior & Senior)**	Year-Round	The CRC Robotics Organizing Committee is always available to meet you and present what the Competition is all about, what it entails for students, teachers and their school or community organization, and to offer guidance and support for any and all aspects of the competition. Interested parties may contact us via info.crc@sciencetech.ca. **Include your school, several availabilities and priority needs in your email
Registration Period	**Junior Registration:** September 10th to December 1st, 2024 **Senior Registration:** September 3rd to October 4th, 2024	**Junior:** Elementary schools and high schools (Grade 7 and 8 only) in Canada **Senior:** High schools (Grade 7+), Cegeps and professional vocational centers in Canada. For **juniors,** the full rulebook is released at the start of the registration period, and, for **seniors,** at the Kickoff event. Late registration may be possible for both competitions. Please contact info.crc@sciencetech.ca for more information.

Item	Date & Location	Description
Kickoff **(Senior only)**	**October 28, 2024** at 7pm *Doors open at 6:30pm* **St. Pius X Career Centre** 9955 Av. Papineau, Montréal, QC H2B 1Z9, Canada	For **senior** participants, the Kickoff officially marks the beginning of the season. The complete rulebook and the playing field are revealed, and the participant kit is distributed to the teams. For logistical reasons, a maximum of 8 individuals per team may attend.
Website, Video, and Tutorial Submission **(Senior only)**	February 3rd 2025 at 11:59:59pm EST *Info on where to submit will be confirmed at Kickoff	Having the website up and running and uploading the video to YouTube may take several hours. We recommend you do not wait until the very last minute before starting the upload and completing the submission procedure. If you encounter any problems, send a detailed explanation to info.crc@sciencetech.ca **before** the submission date and time. The submission forms and procedure will be made available as of January 27th 2025.
24th Annual CRC Robotics Competition, TAKTIK	**February 19-22, 2025** **The **Junior** competition will only take place on February 21, 2025 **St. Pius X Career Centre** 9955 Av. Papineau, Montréal, QC H2B 1Z9, Canada	Join us in the pinnacle of the 2025 CRC Robotics season. After months of hard work, our junior and senior teams will show off what their robots can do. For **senior** participants an exciting, action-packed, 4-day event, with one day (February 21st 2025) dedicated to our **junior** participants!

The Junior Competition

The Junior Competition is a one-day event taking place annually in the midst of the four-day Senior event. The full rulebook for the Junior Competition is made public at the beginning of the Junior Competition registration period.

The following presents the typical Competition schedule. The official and detailed schedule is made available a few weeks before the Competition on the Participant Portal section of the CRC Robotics website (http://www.robo-crc.ca/)

- Friday (21-Feb-25) Morning: Opening Ceremony, Games & Evaluations
- Friday (21-Feb-25) Afternoon: Awards Ceremony

Components

The Competition is divided into two (2) distinct components, which allows students to demonstrate their strengths in different ways and across various disciplines. While not mandatory, teams may choose a theme that would be applicable to one or both of the components.

The Game

This year's game is named TAKTIK. The teams must participate in a triathlon tournament with their own autonomous robot and must ensure that they follow the game's specific rules and requirements. More information on the game can be found in the Complete Junior Rulebook.

Kiosk

The kiosk acts as an information booth, presenting the team's hard work to judges, fellow participants, and visitors to the Competition. It also acts as a workshop and home for the team's robot(s) between the games. The kiosk often represents the team's theme for this year's Competition and essentially involves the application of art and communication. More information on the kiosk can be found in the Complete Junior Rulebook.

The Senior Competition

The Competition is a four-day event that takes place annually. The final Competition rules are made public at the Senior Competition Kickoff, approximately four months before the Competition.

The following presents the typical Competition schedule. The official and detailed schedule is made available a few weeks before the Competition on the Participant Portal section of the CRC Robotics website (http://www.robo-crc.ca/)

	Wednesday	Thursday	Friday	Saturday
Morning	Arrival and setup	Block 2 of heats Design Preliminaries	CRC Junior Competition Block 5 of heats Team Photos Design Finals	Knock-out Rounds
Afternoon	Kiosk Safety Certifications Captains' Meeting	Block 3 of heats Block A Programming Construction Preliminaries	CRC Junior Closing Ceremony Block B Programming Construction Finals	Quarter Finals Semi Finals Beginning of kiosk takedown (after 3pm)
Evening	Opening Ceremony Block 1 of heats Kiosk Preliminaries	Block 4 of heats	Block 6 of heats Kiosk Finals	Finals Captains' Debrief Closing Ceremony

Competition Components

The Competition is divided into nine (9) distinct components, which allows students to demonstrate their strengths across various disciplines. While not mandatory, teams are encouraged to choose a theme that would be applicable to all components of the Competition. More information on each of the following can be found in the Full Senior Rulebook.

Game

The teams must participate in a tournament with their own remote controlled robot and must ensure that they follow the current year's game's specific rules and regulations.

Robot Design

Since the game changes from year to year, the students cannot reuse the exact same design from previous years; however, certain concepts may be reused. Robot design focuses on the team's ability to identify and solve the problems presented in this year's game in the most efficient and creative way using the engineering process. *This component evaluates the evolution of ideas over the execution of those ideas.*

Robot Construction

Since the game changes from year to year, the students cannot reuse the exact same robot from previous years; however, certain parts and mechanisms may be reused. Robot construction focuses on the team's ability to execute their design using the most efficient building processes and considerations of maintenance requirements. *This component evaluates the execution of the idea over the idea itself.*

Kiosk

The kiosk acts as a workshop for the team at the competition and an information booth, which facilitates the presentation of the team's hard work to judges, fellow participants, and visitors to the Competition. The kiosk focuses on a team's ability to balance functionality and interior design, as well as a team's public speaking competencies.

Programming

The programming component is designed to foster and hone the skills and thinking process required to code professionally. This component focuses on the team's ability to solve a series of problems using Python. Enhancing their own toolbox of programming skills as they progress towards more complex problems gaining points along the way.

Video

The video component requires the submission of a fully bilingual video, which must be publicly available prior to the Competition. The video presents an overview of the CRC Robotics Competition in a creative and innovative way. The video component focuses on the team's ability to creatively incorporate information into a storyline and to use film techniques and technology.

Tutorial Video

The tutorial video component requires teams to demonstrate their mechanical, electrical, programming, video, coding or other talents, by providing a step-by-step explanation to achieve any particular task or goal. The tutorial focuses on the team's ability to relay useful information in a complete and concise way showcasing their own understanding of the chosen subject.

Website Design

The website design component requires a fully bilingual website to be created, which must be publicly published prior to the Competition. The website demonstrates the team's hard work to the public. Website design focuses on the team's ability to use optimized web coding and structured layouts to create a user-friendly platform all while creatively engaging the user.

Website Journalism

The website journalism component requires, but is not limited to, a list of participating students, a brief description of this year's game and the design and construction of the robot. Website journalism focuses on the team's ability to produce engaging and relevant content to give the user an insight to the team's robotics experience.

Divisions

With a goal of making the Competition as fair as possible to teams of varying experience levels or resources, the CRC Robotics Competition includes a two-division system for certain elements of the Competition.

The team's Division (1 or 2) is based on general division determinations for the following component(s):

- Robot Design
- Robot Construction
- Kiosk
- Video
- Tutorial Video
- Website Journalism
- Website Design

The team's Division (1 or 2) is based on the team's previous classification within the same component only, for the following component(s):

- Programming

General Determination of Division (1 or 2)

A participating team's division is re-evaluated every year and will be provided in the complete rulebook.

The current year's Division determination is based on the overall result obtained by the team in the previous year's Competition; the top half of the overall ranking will be assigned to Division 1. If there is an odd number of teams, the median team will be in Division 2.

- New high school teams are automatically placed in Division 2
- New CEGEP and vocational center teams are automatically placed in Division 1.

Teams are informed of their division on the night of the Competition Kickoff. However, in the event of late registrations, these assignments can be modified and affected teams will be advised appropriately.

Please note, a team in Division 2 can request to be moved into Division 1, however the CRC reserves all rights to the final allocation of division distribution.

Implication of Divisions

Divisions have no impact on overall classification. All teams are judged together in each component regardless of their division assignment and given an overall classification. Therefore, a team in Division 2 can win the Overall Ranking award.

However, Division 1 and Division 2 teams will receive separate awards for each of the components. These awards are based on the teams ranking for each component within their respective divisions. This is to ensure equitable recognition of teams in Division 2 and a general view of the ranking within a group at the same d level of experience.

Scoring Logic

For each component of the Competition, the number of points equal to the total number of teams is given to a first-place ranking, all regardless of Division if applicable. The score given to other ranks can be calculated using the following formula:

$$Score = Total\ Number\ of\ Teams - Rank + 1$$

- For Senior, Kiosk, Programming, Robot Design, Robot Construction, Website Design, Website Content, Video and Video Tutorial components follow the formula mentioned above.
- For Senior, the game component counts for double the value of the formula mentioned above.
- In the case of a tie, the teams receive the same score for that category.
- The total number of points for all components determines the overall ranking.

Overall Ranking

The Overall Ranking award is presented to the three teams that receive the greatest score after combining the points in each component. They are deemed to be the best performing teams in the Competition as a whole. The team in first place also receives a trophy symbolizing their success.

Awards and Recognitions & Rankings

Awards – Junior Competition

Awards and recognitions of participation are presented to the most performing team(s) in each component.

Individual Participation

The Participation recognition, in the form of a patch, is presented to every student that officially participated in one of the teams registered to the Junior Competition.

School Participation

Each participating school will receive a Participation recognition in the form of a plaque.

Game – Triathlon Challenges

This award is presented for each challenge to the three teams who received the greatest scores in each of the challenges of the Triathlon game.

Kiosk

The Kiosk award is presented to the three teams that received the greatest scores from our judges and that were deemed to have the best designed kiosk and best presentation of their team.

Awards – Senior Competition

In this section, an "award" is a prize that is presented for a component whose score counts towards the overall ranking and a "recognition" is a prize that is presented for a component whose score does not count towards the overall ranking.

Awards

Awards are presented to the top three teams of each Division, for each of the nine (9) ranked components previously mentioned. In the event of a tie, both teams shall receive an award.

Recognitions – Senior Competition

Recognitions

A "recognition" is a prize that is presented for a component for which the score does not count towards the overall ranking.

Sportsmanship Recognition

The Sportsmanship recognition is presented to the three teams that are deemed the most respectful towards their peers and exhibit behavior based on values of respect and integrity that go beyond the Competition's rules and etiquette. The winning teams are selected by their peers and the team in first place also receives a trophy that symbolizes their sportsmanlike conduct: The Founders' Trophy.

Never Say Die Recognition

The Never Say Die recognition is presented to the team that encountered many obstacles throughout the course of the Competition and that persevered to finally overcome those hurdles despite all hurdles. This winner is selected by the CRC Robotics Organizing Committee and receives a trophy that symbolizes all their hard work and perseverance.

Golden Benchy Recognition

The Golden Benchy recognition is presented to the team that is deemed to have the most creative and innovative use of a 3D printed component used on either their robot and/or their kiosk. This winner is selected by the CRC Robotics Team Resources Committee.

Best Shot Recognition

The Best Shot recognition is presented to the team that was deemed to have had the best submission of a short video (less than a minute) or clip taken at the competition. This winner is selected by the CRC Robotics Video Committee.

Most Immersive Theme Recognition

The Most Immersive Theme recognition is presented to the team that was deemed to have had the best theme integration at the competition through their commitment to their chosen theme within their kiosk, costumes and overall presence at the competition. Teams can be disqualified and risk penalties in other components if their theme is considered inappropriate or disruptive to the public, other teams or the general flow of the competition. This winner is selected by the CRC Robotics Organizing Committee.