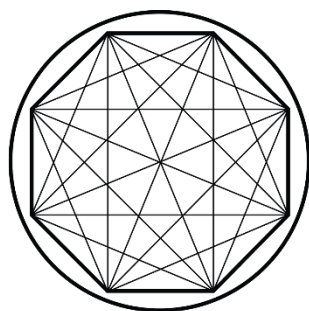




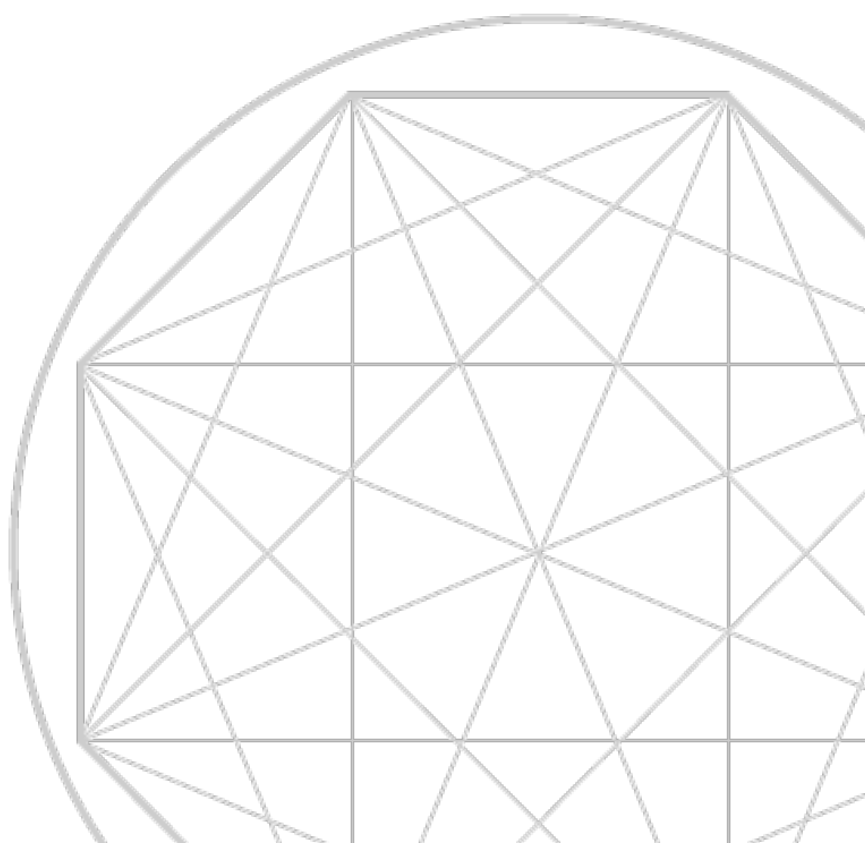
IDE SERIES

2025 SINGAPORE

COMPETITION MANUAL

Updated: 21 Jan 2025

Event Organiser:



INTRODUCTION TO IDE SERIES

Introduction

IDE (Innovation, Design and Engineering) Series is a national technology and engineering competition event. The aim of the competition is to challenge students on problem solving across domains such as electronics, programming, and mechanical design.

The spirit of IDE Series is to enable our youths to apply their technology skills and creativity to solve problems. This is executed through the element of a surprise mission or previously unseen challenge which will be revealed only on the competition day. For IDE 2025, there are 11 competition events in the series, namely:

1. IDE Robotics (Open Platform)
2. IDE Robotics (LEGO)
3. IDE Sprint
4. IDE Maker
5. IDE Sumobot
6. IDE VEX 123
7. IDE VEX GO
8. IDE VEX IQ
9. IDE VEX VRC
10. IDE Code Builder (Scratch 3.0)
11. IDE Code Hacker (Python 3.x)

IDE Code Builder and Code Hacker preliminaries will be held **in-person** this year. Finalists will be invited to the competition venue. Prizes for these categories will also be presented in-person.

IDE Series is open to Singapore schools, international schools (both local and foreign), and public teams.



OVERVIEW OF COMPETITION EVENTS (Part 1)

	IDE Robotics (Open Platform)	IDE Robotics (LEGO)	IDE Sprint	IDE Sumobot
Competition Area	Mechanical design and programming	LEGO® mechanical design and programming	LEGO® mechanical design and programming	LEGO® mechanical design
Competition Date	27-28 May 2025 (Onsite)			
Target	Robotics and Infocomm Clubs			
Platform	Open Platform ^ (Eg. mBot, Maqueen, Arduino)	LEGO® Mindstorms EV3 / SPIKE Prime		
Primary (Age 9-12)	✓	✓	✓	✓
Secondary (Age 13-17)	✓	✓	✓	✓
Tertiary (Age ≥16)	-	-	-	-
Team	Team (1-3 pax)			
Registration Fee * (Ends 31 Mar 2025)	\$100/team (\$80/team for Early Bird Registration)			
Additional Fee	*\$115 for IDE Robotics Playfield (Optional) *\$40 for IDE Robotics Mission Prop Elements (Optional)		*\$115 for IDE Sprint Playfield (Optional)	-

* Price is inclusive of delivery. Self-collection option available.

^ Arduino, BBC micro:bit, mBot, Maqueen and other microcontroller platforms are allowed for IDE Robotics (Open Platform).

OVERVIEW OF COMPETITION EVENTS (Part 2)

	IDE Maker	IDE Code Builder	IDE Code Hacker
Competition Area	Innovation, design thinking, electronics and programming	Block-based Programming	Text-based Programming
Competition Date	8-9 May 2025 (Online Prelim) 27-28 May 2025 (Onsite Finals)	Preliminary Round to be held on 5-7 May 2025 (Onsite Prelim) Competition Finals to be held on 27-28 May 2025 (Onsite Finals)	
Target	Design & Technology, Robotics and Infocomm Clubs	Robotics/Infocomm Clubs, ALP students, Computing students.	
Platform	Open Platform ^	Scratch 3.0	Python 3.x
Primary (Age 9-12)	✓	✓	-
Secondary (Age 13-17)	✓	✓	✓
Tertiary (Age ≥16)	-	-	✓
Team	Team (1-3 pax)	Individual	Individual
Registration Fee * (Ends 31 Mar 2025)	\$100/team (\$80/team for Early Bird Registration)	\$45/student (\$35 for Early Bird Registration)	
Additional Fee	N/A	N/A	N/A

^ Arduino, BBC micro:bit, and other microcontroller platforms are allowed for IDE Maker.

OVERVIEW OF COMPETITION EVENTS (Part 3)

	IDE VEX 123 Challenge	IDE VEX GO Challenge	IDE VEX IQ Challenge	IDE VEX VRC Challenge
Competition Area	VEX mechanical design and programming			
Competition Date	27 May 2025 (Onsite)		27 May 2025 (Onsite - Primary) 28 May 2025 (Onsite - Secondary)	28 May 2025 (Onsite)
Target	Robotics and Infocomm Clubs			
Platform	VEX 123	VEX GO	VEX IQ	VRC
Preschool (Age 5-6)	✓	-	-	-
Lower Primary (Age 7-9)	✓	✓	-	-
Upper Primary (Age 10-12)	-	-	✓	-
Secondary (Age 13-17)	-	-	✓	✓
Team	Team (2-5 pax)	Team (2-3 pax)		Team (4-5 pax)
Registration Fee * (Ends 31 March 2025)	\$100/team (\$80/team for Early Bird Registration)			
Additional Fee (Loan of Robotics Set & Competition Elements)	\$100 (Waived for 1 st 10 sign-ups)	\$150	\$350	More details to be announced

IDE Robotics (LEGO / Open Platform)

IDE Robotics involves building and programming robots using any robotics platform to achieve objectives on the mission playfield for the year. Part of the competition objectives will be revealed ahead of time so that students can make preparations, but some of the objectives will only be revealed on competition day. Students will have 3 hours to make practice runs for their robots before making their competition robot runs.

There are no platform restrictions for IDE Robotics (Open Platform) category.



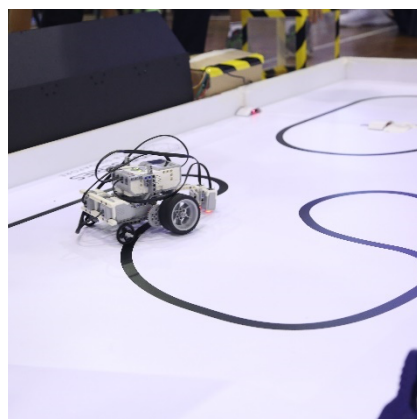
IDE Maker

IDE Maker is a competition for students to design and program a project prototype based on the competition theme for the year. There will be a preliminary judging round held via Zoom for students to present and showcase their working prototypes. Selected teams will be invited to the finals at the competition venue where they will demonstrate and showcase their prototype to a panel of judges.



IDE Sprint

IDE Sprint is a fast-paced robot racing competition using the LEGO® Robotics platform. Teams will perform calibration and adjust their programs to create the fastest line tracing robot. Teams will not just be challenged to have their robot make the fastest run, but part of the playfield line drawing will only be revealed on the competition day.



IDE Code Builder & IDE Code Hacker

IDE Code Builder is based on Scratch 3.0, and will be available for Primary and Secondary teams, while IDE Code Hacker is based on Python $\geq 3.x$, and is available for Secondary and Tertiary teams. Students will code based on a series of computing-based questions, and teams will be awarded points for each working code that is submitted. **This year, a preliminary round will be held onsite prior to the competition date, finalists will be invited to compete at the competition venue.**



IDE Sumobot

IDE Sumobot is a competition involving two robots competing to push each other off the playfield. Teams may engage in a variety of building and programming strategies to seek, engage, dodge, outwit, or otherwise overpower their opponents.



IDE VEX 123 Challenge

IDE VEX 123 is a fast-paced robotics tournament using the VEX 123 platform. Challenges are aimed at testing participants' ability to plan and execute programs. Participants will need to program their robot to navigate the playfield and move towards the objectives.



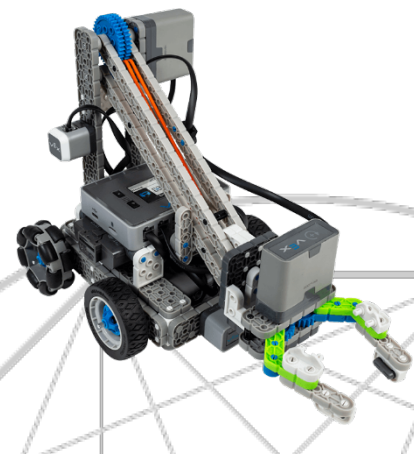
IDE VEX GO Challenge

The challenge features two categories: the Team Manual Challenge and the Independent Autonomous Challenge. In the Team Manual Challenge, teams collaborate to overcome obstacles, while the Independent Autonomous Challenge tests individual teams' programming finesse.



IDE VEX IQ Challenge

The VEX IQ Robotics Competition encompasses both the *Teamwork Challenge* and the *Robot Skills Challenge*. This section determines how the *Teamwork Challenge* and *Robot Skills Challenge* are to be played at a given event.



IDE VEX VRC Challenge

The VEX Robotics Competition *Matches* are played in a Head-to-Head tournament format. Head-to-Head Tournaments consist of *Qualification Matches* and *Elimination Matches*. *Qualification Matches* are used to rank *Teams* based on *Win Points* (WP), *Autonomous Points* (AP), and *Strength of Schedule Points* (SP).



COMPETITION RULES

Rules and Regulations

General:

1. During the competition, all teams must look after their own personal property, team construction and materials.
2. Any member(s) of the competition who is/are caught in the act of sabotage, theft or mischief, whether to cause harm to other participating teams or not, will be dealt with by the competition organisers and may subject the team to disqualification.
3. No external help is to be rendered in this competition. This includes receiving direction, contribution, construction of any kind from any party or person not belonging to the team. Failure to comply with this rule will be dealt seriously and may subject the team to disqualification.
4. All decisions by the competition officials and organising parties are final.

IDE Robotics (LEGO), IDE Sprint & IDE Sumobot

1. Teams are expected to bring their own LEGO® Mindstorms EV3 or Robot Inventor or SPIKE Prime Sets, batteries and laptops. No sharing of robots between teams allowed.
2. Each robot is only allowed to use one controller (either Mindstorms EV3 or Robot Inventor or SPIKE Prime). However, the number of motors and sensors is not restricted. No multiplexing of motor or sensor ports allowed.
3. List of Approved Sensors and Motors (Table 1) – HiTechnic sensors are **not allowed**

 EV3 Large Motor	 EV3 Light/Color Sensor	 EV3 Touch Sensor	 EV3 Ultrasonic Sensor	 EV3 Gyro Sensor
 EV3 Medium Motor	 Force Sensor	 Large Motor	 Medium Motor	 Color Sensor
 Distance Sensor				

4. Only LEGO® branded components may be used for the robot.
5. **Use of LEGO® Powered Up electric motors are allowed.**
6. Before each competition run, an inspector will check the robots for any non-LEGO® or non-approved parts/accessories. Team may face possible disqualification if the parts cannot be removed.
7. The size of the robot will be strictly limited to 25cm x 25cm x 25cm at the starting area. All extensions beyond the size limit must be deployed autonomously.
8. Teams have allocated time to program and test their robots on the competition day. Following which, during the competition runs, no further modifications may be made.
9. Robots are to be completely autonomous and finish the mission without interference from any external influence.
10. Robots used here are not allowed to be used again for IDE Robotics (Open Platform).

School and Team Eligibility

Preschool Category (For VEX)

- ☐ Age 5 to 6 years (in 2025)
- ☐ IDE VEX 123 Challenge

Lower Primary Category (For VEX)

- ☐ Age 7 to 9 years (in 2025)
- ☐ IDE VEX 123 Challenge, IDE VEX GO Challenge

Upper Primary Category (For VEX)

- ☐ Age 10 to 12 years (in 2025)
- ☐ IDE VEX IQ Challenge

Primary Category

- ☐ Age 9 to 12 years (in 2025)
- ☐ IDE Robotics, IDE Robotics (Open), IDE Maker, IDE Sprint, IDE Sumobot, IDE Code Builder

Secondary Category

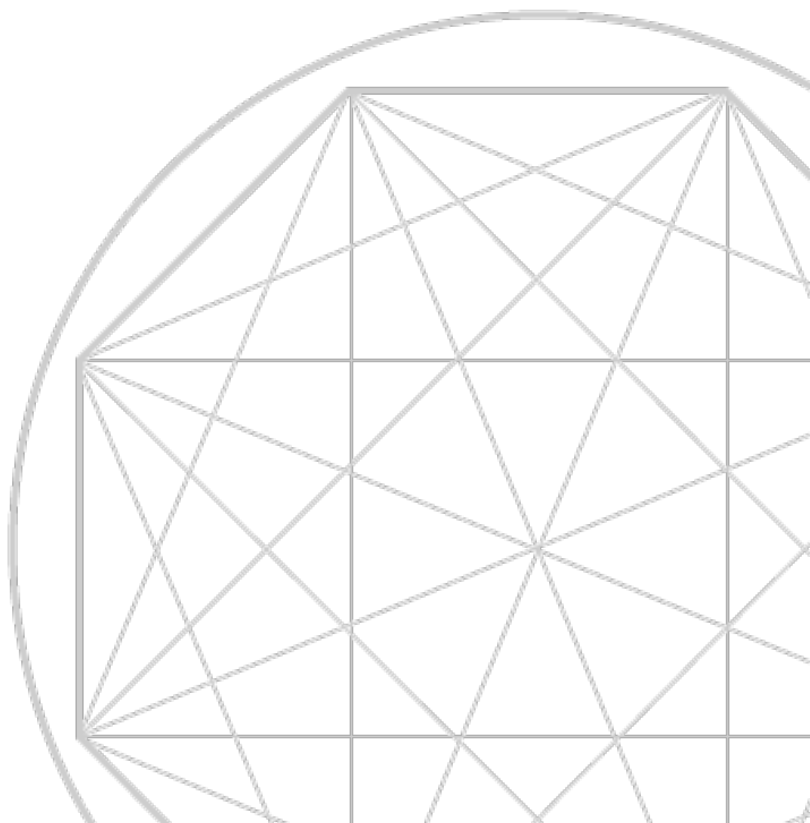
- ☐ Age 13 to 17 years (in 2025)
- ☐ IDE Robotics, IDE Robotics (Open), IDE Maker, IDE Sprint, IDE Sumobot, IDE Code Builder, IDE Code Hacker, IDE Challenge, IDE VEX IQ Challenge, IDE VEX VRC Challenge

Tertiary Category

- ☐ Age 16 to 19 years (in 2025)
- ☐ IDE Code Hacker

Team Registration (for team-based categories)

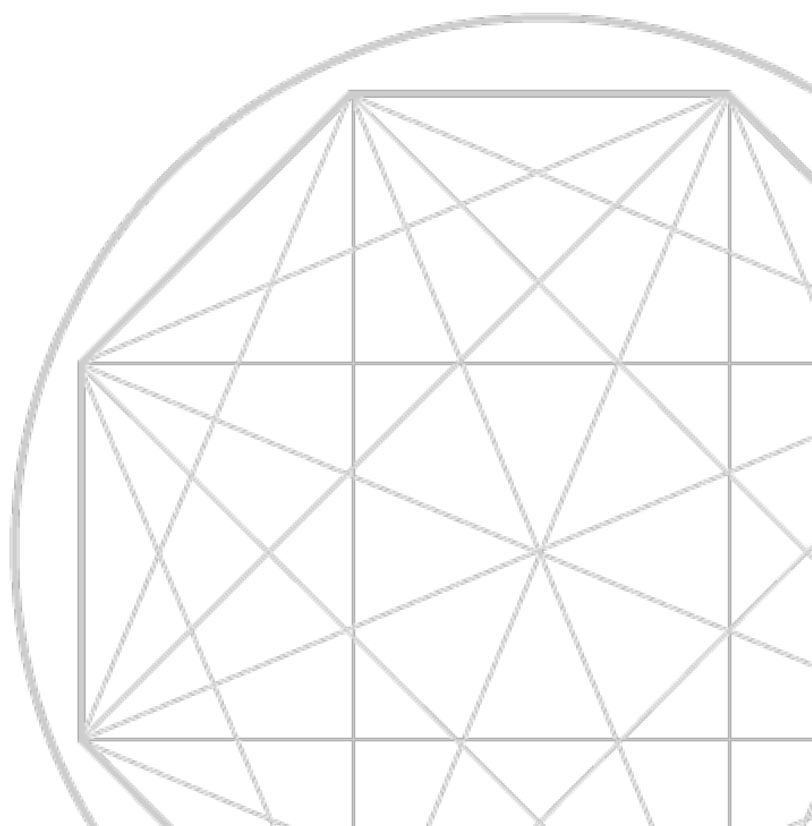
- ☐ Up to 3 students
- ☐ Up to 5 students (IDE VEX 123 Challenge, IDE VEX VRC Challenge)



IMPORTANT DATES

Early Bird Registration Deadline *	28 February 2025
Registration Deadline	31 March 2025
IDE Maker (Project Documentation Submission)	2 May 2025
IDE Code Builder (Preliminaries)	5-7 May 2025 (Primary, Secondary Category)
IDE Code Hacker (Preliminaries)	5-7 May 2025 (Secondary, Tertiary Category)
IDE Maker (Preliminaries)	8-9 May 2025, on Zoom , timing TBC
IDE Robotics (LEGO / Open Platform) IDE Sprint IDE Sumobot IDE Maker (Finals) IDE Code Hacker (Finals) IDE Code Builder (Finals) IDE VEX 123 Challenge IDE VEX GO Challenge IDE VEX IQ Challenge IDE VEX VRC Challenge	27 May 2025 (Preschool, Primary Category) 28 May 2025 (Secondary, Tertiary Category)
Prize Presentation	27 May 2025 (Preschool, Primary Category) 28 May 2025 (Secondary, Tertiary Category)

* To enjoy early bird registration rates, payment must be made by 28 Feb 2025. For MOE schools early bird rate will apply for e-invoice sent before 28 Feb 2025, thereafter normal registration rate will apply.



AWARDS

All award categories are not mutually exclusive. For example: A team may be awarded both the “Design Award” and “Judges Special Mention Award” for the IDE Maker Competition. Prizes are subjected to adjustment by the organisers and will be updated on the competition website.

IDE Maker Awards

Awards	Prizes
Championship Award	First to Third: Competition Trophy, Medals
Innovation Award	Competition Trophy & Medals
Design Award	Competition Trophy & Medals
Engineering Award	Competition Trophy & Medals
Judges’ Special Mention Award	Certificates

IDE Robotics (LEGO / Open Platform), IDE Sprint, IDE VEX 123, IDE VEX GO, IDE VEX IQ, IDE VEX VRC Awards

Awards	Prizes
Championship Award	First to Third: Competition Trophy, Medals
Fourth to Tenth Position:	Ranking Certificates

**IDE Robotics (LEGO) ranking awards will be further subdivided into (MOE/International) school category and private team category.*

IDE Code Builder, IDE Code Hacker Awards, IDE Sumobot

Awards	Prizes
Championship Award	First to Third: Competition Trophy, Medals
Other Finalists	Ranking Certificates

Overall Championship School Award

To qualify for the overall championship award, schools/organizations must register at least one team in:

- ☐ IDE Robotics (LEGO or Open Platform)
- ☐ IDE Sprint or IDE Sumobot
- ☐ IDE Maker or IDE VEX (123 / GO / IQ / VRC)
- ☐ IDE Code Builder or IDE Code Hacker

Championship score will be tabulated based on the number of awards in the abovementioned events.

**The organisers may, at their discretion, modify the category of awards, and/or the award itself.*

REGISTRATION

Registration for IDE 2025 closes on 31 March 2025.

Please take note of the following registration rules:

1. The organizers reserve the right to reject any teams that do not fulfill the registration criteria.
2. No changes to the registration form will be allowed after **31 March 2025**.
3. **Registration of teams is only confirmed upon payment of registration fees.**
4. Up to 3 students and 1 Teacher Mentor (TM) per team.
5. Up to 5 students (IDE VEX 123, IDE VEX VRC) and 1 Teacher Mentor (TM) per team.
6. The same TM can be registered for multiple teams.

To register for the competition events and purchase optional bundles, please visit our website at:

<https://ideseries.org/ide2025>

Optional Bundle Purchase

Item	Price
Laminated Certificate of Participation	\$5
IDE Robotics Playfield	\$115
IDE Robotics Mission Prop Elements	\$40
IDE Sprint Playfield	\$115
Lunch Bento Set (Halal & Healthier Choice Catering)	\$8
IDE Robotics / IDE Sprint Competition Plywood Playfield (preorder: to be delivered on 28 May 2025 after competition event)	\$100 inclusive of delivery

Group Buy Preorder (LEGO Education SPIKE Prime)

Place your order by 28 Feb 2025, deliver by 31 Mar 2025. 1 year warranty on SPIKE Hub, motors, sensors. Order fulfilled by Nullspace Robotics Pte Ltd; price is subject to GST.

Item	Price (before GST)	Price (After GST)
SPIKE Prime Core Set (45678)	\$860	\$937.40
SPIKE Prime Expansion Set (45681)	\$280	\$305.20
SPIKE Prime Colour Sensor (45605)	\$70	\$76.30
SPIKE Prime Medium Motor (45603)	\$100	\$109.00
SPIKE Prime Large Motor (45602)	\$120	\$130.80

CONTACT INFORMATION

For competition and registration enquiries, contact: sg@ideseries.org

For VEX competition related enquiries, contact: raymond@vm-education.com

