IDE SERIES

2018 SINGAPORE

COMPETITION MANUAL

Updated: 20 February 2018

Event Organiser:

[ ] NULLSPACE

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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.

There is a total of 6 different competition events in 2018, each event contains an unknown mission or challenge, which will be revealed at the start of the competition. These challenges vary from year to year, but the emphasis on innovativeness, design element and engineering remains at the heart of the competition.

There are six competition events in the series, namely

1. IDE Challenge
2. IDE Robotics
3. IDE Maker
4. IDE Junior Maker
5. IDE Sprint
6. IDE Mech Wars

IDE Series is open to Singapore schools, international schools (both local and foreign), and public teams (as long as age criterion is met).
# Overview

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<th>IDE Junior Maker</th>
<th>IDE Sprint</th>
<th>IDE Mech Wars</th>
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</thead>
<tbody>
<tr>
<td>Year Started</td>
<td>2011</td>
<td>2012</td>
<td>2015</td>
<td>2018</td>
<td>2018</td>
</tr>
<tr>
<td>Competition Area</td>
<td>Hands-on design and construction skills</td>
<td>LEGO® mechanical design and computer programming</td>
<td>Innovation, design thinking, electronics and programming</td>
<td>Innovation, design thinking, electronics and programming</td>
<td>LEGO® mechanical design and computer programming</td>
</tr>
<tr>
<td>Target</td>
<td>Science Clubs and Design &amp; Technology</td>
<td>Robotics and Infocomm Clubs</td>
<td>Design &amp; Technology, Robotics and Infocomm Clubs</td>
<td>Design &amp; Technology, Robotics and Infocomm Clubs</td>
<td>Robotics and Infocomm Clubs</td>
</tr>
<tr>
<td>Platform</td>
<td>N/A</td>
<td>LEGO® Mindstorms</td>
<td>Arduino</td>
<td>BBC micro:bit</td>
<td>LEGO® Mindstorms</td>
</tr>
<tr>
<td>Primary (Age 9-12)</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Secondary (Age 13-16)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>Registration Fee * (Early Bird ends 31 Dec 2017)</td>
<td>$60/team (Early Bird)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Registration Fee * (Ends 28 Feb 2018)</td>
<td>$80/team (Normal)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Optional Fee</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Additional 20% discount per team registration for schools registering for the first time.
IDE Challenge
IDE Challenge is a hands-on competition with one or more engineering challenges. The challenge details will be announced one week before the actual competition day. Teams may use this one week to work on their solution and design. On the actual day of competition, teams will need to create the most effective design under limited time using the materials provided to them.

IDE Robotics
IDE Robotics is a surprise mission style competition using the LEGO® Mindstorms platform. The mission will be announced on the morning of the competition day and students have 4 hours to prepare for the mission. This competition will serve as a training platform for teams to think on their feet to overcome a mission playfield under limited time. There will be an optional half day LEGO® Mindstorms EV3 robotics bootcamp one day before the competition for beginner students to pick up robotics skills.

IDE Maker
IDE Maker is a competition centring around the popular open-source Arduino microcontroller platform to design and program a project prototype based on the competition theme for the year. Teams will have to create a video of 2 minutes or less to explain their project. Teams will also be given a booth to showcase their projects during the competition day for judging.
IDEJunior Maker
IDE Junior Maker is a competition centring around the popular BBC micro:bit platform to design and program a project prototype based on the competition theme for the year. Teams will have to create a video of 2 minutes or less to explain their project. Teams will also be given a booth to showcase their projects during the competition day for judging.

IDE Sprint
IDE Sprint is a fast paced robot racing competition using the LEGO® Mindstorms platform. Teams have 1 hour on the competition day for calibration and to adjust their programs to create the fastest line tracing robot that can overcome a 3-dimensional terrain. The design of the line path will only be revealed on the competition day.

IDE Mech Wars
IDE Mech Wars is a team based robot strategy game using the LEGO® Mindstorms platform. Two teams of 3 robots per side will face off each other in a battle for scoring objectives on the field. Participants will use wireless controllers to control their robots on the field.
IDE CHALLENGE

Scope of Competition
The competition challenge is open ended with varied scoring elements and fields wrapped around a central theme. Much of the challenge itself will depend on the students’ ingenuity, experience in design and construction, and familiarity with tools and materials rather than textbook knowledge.

Challenge for 2018: Faster, Higher, Stronger
This year’s competition is made up of three challenges. Students will have 4 hours of construction time to tackle 3 separate challenges in total.

<table>
<thead>
<tr>
<th>Faster</th>
<th>Higher</th>
<th>Stronger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students have to build a (unpowered) race car to be released from an inclined ramp and travel a flat ground distance of 4m.</td>
<td>Students have to build a contraption to protect eggs from breaking when dropped from a certain height.</td>
<td>Students have to build a bridge that is able to withstand the weight of drink cans loaded on it.</td>
</tr>
</tbody>
</table>

The above is the challenge in brief for IDE Challenge 2018. The exact specifications of the challenge will be announced on 7 March 2018 (Challenge Announcement Day) through email and website update, one week before the competition day. Participating teams will have to make use of the one week to prepare for the competition.

On the actual competition day, participating teams are not allowed to bring along any pre-made prototype/design to the competition.
IDE ROBOTICS

Scope of Competition
The competition mission consists of several scoring elements and tasks wrapped around a central theme. Using the LEGO® NXT or EV3 robotics platform together with their imagination and creativity, students will devise the most efficient strategy to deliver the mission objectives and maximize their results. The competition will be divided into 2 categories, namely Primary, Secondary, with missions of different levels of difficulty.

Robotics Bootcamp
For beginner participants who would like to have formal training on using LEGO® Mindstorms EV3 and the Mindstorms programming software, there will be a half-day robotics bootcamp held before the competition. This half-day bootcamp will be held in one of our organising schools.

This bootcamp is optional and comes with a fee of $100 per team of 3 students, inclusive of tea break. There is a limited vacancy of 10 teams per primary/secondary category, so it will be offered on a first-come-first-serve basis.

Mission for 2018
The mission for IDE Robotics 2018 will be announced on the morning of the competition day. Teams will have 4 hours of preparation time to build and program their robot before the competition.
**LEGO® Robotics Bootcamp Details**

This bootcamp is OPTIONAL and is only open to schools that have signed up for IDE Robotics competition.

**Venue:** To be confirmed  
**Date:** 14 March 2018  
**Time:** 12pm to 5pm  
(4.5 hours of lesson + 30 mins tea break, refreshments provided)  
**Cost:** $100 per team, fees will be billed to the school through e-invoice

**Course Include:**
- 4.5 hours of LEGO® EV3 and EV3 Mindstorms programming course  
- Printed lesson materials  
- Tea break refreshments for 3 students and 1 teacher mentor per team

**Materials Covered:**
- Introduction to LEGO® EV3 Robotics System  
- Construction tips and tricks  
- Getting around EV3 Mindstorms programming interface  
- Motor control  
- Loops and Conditionals  
- Mission-based training

Teams have to bring their own LEGO® Mindstorms EV3 set and laptop (with EV3 Mindstorms installed) for the bootcamp.

Students attending the bootcamp can be other students from the same school. We will only charge the school based on the number of teams registered for the bootcamp. (If your school has registered 2 teams for the bootcamp, you may send any 6 students for the course).

Registration for the bootcamp is to be completed during the sign up for the competition. (Refer to Page 23, Important Dates and Details for registration details). Registration is on a first come first served basis. There is only vacancy for 10 teams per Primary/Secondary Category.
IDE MAKER

Scope of Competition
IDE Maker is a competition aimed at encouraging a new generation of makers to solve problems through technology. Students will be using the Arduino microcontroller board, one of the most popular open source electronics microcontroller. In this competition, students will design and program their microcontroller project based on the competition theme.

Challenge Theme for 2018
The theme for this year's challenge is "Technology in Environmental Conservation". With greater technological power comes greater responsibility. How can we harness technological solutions to improve our environment?

Teams are to conceptualise an innovative solution to solve an environmental problem or to support environmental conservation.

Maker Talks & Surprise Challenge
Participating teams are welcome to attend a series of maker talks with invited speakers from the industry. More details will be announced on the competition day!

Maker Project Showcase
Teams are to design and prototype their solutions to be showcased on the competition day. Teams are to submit a video of less than 2 minutes to explain how their prototypes will solve an environmental problem or to support environmental conservation.

Teams are to adhere to the video and showcase submission guidelines. For past competition videos, you may refer to our YouTube channel.
Submission Guidelines

In addition to demonstrating their prototype, teams are to prepare a video to be submitted one week before the competition day as well as to put up a poster for judging.

Video Guideline
- Maximum Duration: 2 minutes
- Include IDE2018 image at the start of the video for at least 1 second. Image can be downloaded from the [IDE competition website](http://idecompetition.com).
- Submit the video by 7 March 2018, 12pm. Upload the video to Dropbox or Google Drive and share the video link with ide@nullspace.com.sg

Poster Guideline
- Maximum A1 poster printed on foam board
- Poster should display school name, team name, and project title clearly

Competition Day

Teams will be given a booth area to showcase their project and poster. Teams are encouraged to be creative in their booth setup, so as to make a compelling and engaging case for the solution that they have come up with. Booth dimensions will be released by email to participating teams.

Judging Rubrics

Teams will be assessed based on the following on an equally weighted basis:

1. Novelty & Innovativeness
2. Design and Aesthetics
3. Usefulness & Impact Factor
4. Cost Effectiveness
5. Presentation
6. Relevance to Theme
7. Quality of Implementation
8. Popular Vote

Rubric 1 to 7 will be based on scoring by the judging panel, while Rubric 8 will be determined by popular vote based on video submission.
IDE JUNIOR MAKER

Scope of Competition
IDE Junior Maker is a competition aimed at encouraging a new generation of makers to solve problems through technology. Students will be using the BBC micro:bit board, a popular microcontroller used in schools globally. In this competition, students will design and program their microcontroller project based on the competition theme.

Challenge Theme for 2018
The theme for this year’s challenge is "Technology in Environmental Conservation". With greater technological power comes greater responsibility. How can we harness technological solutions to improve our environment?

Teams are to conceptualise an innovative solution to solve an environmental problem or to support environmental conservation.

Maker Talks
Participating teams are welcome to attend a series of maker talks with invited speakers from the industry. More details will be announced on the competition day!

Maker Project Showcase
Teams are to design and prototype their solutions to be showcased on the competition day. Teams are to submit a video of less than 2 minutes to explain how their prototypes will solve an environmental problem or to support environmental conservation.

Teams are to adhere to the video and showcase submission guidelines. For past competition videos, you may refer to our YouTube channel.
Submission Guidelines

In addition to demonstrating their prototype, teams are to prepare a video to be submitted one week before the competition day as well as to put up a poster for judging.

Video Guideline

- Maximum Duration: 2 minutes
- Include IDE2018 image at the start of the video for at least 1 second. Image can be downloaded from the IDE competition website.
- Submit the video by 7 March 2018, 12pm. Upload the video to Dropbox or Google Drive and share the video link with ide@nullspace.com.sg

Poster Guideline

- Maximum A1 poster printed on foam board
- Poster should display school name, team name, and project title clearly

Competition Day

Teams will be given a booth area to showcase their project and poster. Teams are encouraged to be creative in their booth setup, so as to make a compelling and engaging case for the solution that they have come up with. Booth dimensions will be released by email to participating teams.

Judging Rubrics

Teams will be assessed based on the following on an equally weighted basis:

1. Novelty & Innovativeness
2. Design and Aesthetics
3. Usefulness & Impact Factor
4. Cost Effectiveness
5. Presentation
6. Relevance to Theme
7. Quality of Implementation
8. Popular Vote

Rubric 1 to 7 will be based on scoring by the judging panel, while Rubric 8 will be determined by popular vote based on video submission.
IDE SPRINT

Scope of Competition
IDE Sprint is a fast paced robot racing competition using the LEGO Mindstorms platform. Teams have 1 hour on the competition day to calibrate and adjust their programs to create the fastest line tracing robot that can overcome a 3-dimensional terrain. The design of the line path will only be revealed on the competition day.

Playfield Mission

The line segment of the playfield will be 2 cm wide. The playfield will consist of 2 ramps placed along the middle section. The dimensions of the playfield ramp are provided as shown (in mm), with a tolerance of +/- 5mm.
**Competition Format**

Teams will be judged solely on their robot lap timing. Each team will have 3 attempts, the best timing out of the 3 attempts will be used to do the final team rankings. Lap timing is the amount of time it takes for the robot to complete one lap around the playfield. All timings will be done using an electronic timer. An attempt is disqualified if a robot is unable to progress on the line path or if the line path is no longer between the two driving wheels of the robot.

![Diagram](image)

Robot controller starts the robot a distance away from Goal Line

Goal Line with Electronic Timer

Timer is activated the moment robot crosses the Goal Line.

Timer stops the moment robot crosses the Goal Line a second time. Lap time is calculated.

Line path not between driving wheel, attempt is disqualified.
IDE MECH WARS

Scope of Competition
The IDE Mech Wars is a competition aimed at developing coordinated teamwork, challenges strategic planning in a team and encourages creative robot designs. Students will form teams of 3 robots utilising the LEGO® Mindstorms platform and will be controlling their robots through wireless controllers to compete against other teams.

Mech Wars Playfield
The IDE Mech Wars makes use of a playfield with additional props and terrain additions to spark creative juices in the students while designing their robots to achieve certain objectives or to fulfil a specific role in the team.

Sample drawing of playfield

The following are field elements that can be found in the IDE Mech Wars Playfield for IDE 2018:

1. **Tesseract**
   There will be a total of 2 Tesseracts situated at each of the white boxes around the playfield. At the end of the game, the Tesseract will award penalty points when it detonates. The penalty points will be given to whichever team is closer to the detonated tesseract at the end of the game. The Tesseract is required to have an edge touching the tesseract zone for it to detonate. A more detailed visualisation is given below:
Case 1: Fully in Grey Zone, Tesseract will detonate. Blue team will incur penalty of -20 points.

Case 2: Fully out of Grey Zone, Tesseract will not detonate.

Case 3: Partially inside Grey Zone and touching white line, Tesseract will detonate. Both team will incur penalty of -10 points each.

Case 4: Partially inside Grey Zone, Tesseract will detonate. Blue team will incur penalty of -20 points.

2. Energy Reactor
Each team possess a team Energy Reactor (Red/Blue ball) which is situated at the centre of their start zone marked with a cross symbol. Teams are to protect their Energy Reactor and at the same time attempt to steal the opponent’s Energy Reactor!

3. Supplies
On the top of the pyramid elevation, 9 supply balls will be placed, equivalently spaced apart. Each supply ball is worth a certain number of points which will be detailed later. Teams are expected to bring as much supplies back to their home base as possible. As the score is only tabulated at the end of a round, enemy teams could sneak into the bases to steal these supply balls away so do keep an eye out for them!
4. Neodymium Ore

There will be a total of 2 Neodymium ores situated at each of the white boxes around the playfield. Each neodymium ore is worth a certain number of points which will be detailed later. Teams are expected to bring as much neodymium ore back to their home base as possible. As the score is only tabulated at the end of a round, enemy teams could sneak into the bases to steal these neodymium ores away so do keep an eye out for them!

Gameplay

1. Each team will get 2 competition runs, each lasting for 2 minutes and 30 seconds.
2. The game will start when the judge says "Ready...Set...Go!". Only then are the robots allowed to move out of their respective demarcated zones.
3. No more wireless controlled movement is allowed when the referee says "Time’s up!". All wireless controllers are expected to be placed away from the player to prevent overtime manoeuvres by any robot in the field. The judge will then tabulate the score at the end of gameplay. The judge has the full discretion to award penalty points for non-compliance to instructions.
4. No one is to use any human body parts or tools to flip back an overturned robot during gameplay. Only wirelessly controlled allied/enemy robots are allowed to attempt to flip back an overturned robot.

Team Flag

Each team must have their own unique team flag. All 3 robots in the team must mount and display the team flag in a prominent position. Only the flag may be made of non-LEGO based material. All other components of the robot (including the flag pole) must follow rules found under COMPETITION RULES. Competition officials reserve the right to remove any offensive or inappropriate flags from the robots.

Wireless Controllers

Participating teams need to prepare their own wireless controllers. There are no restrictions to the 3rd party wireless controllers allowed for use in the Mech Wars segment. Teams may also choose to control their robots via Bluetooth through their handphones or mobile devices. It is advisable for participants to test the pairing of controllers before the competition day itself. Teams are also solely responsible for charging and ensuring that the battery levels of their wireless controllers are sufficient for the practice/actual competition rounds.

Teams who attempt to interfere with the wireless controllers of other teams during pairing or gameplay will be disqualified.
Scoring
Scores will be tabulated after a round ends and all robots have stopped moving.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Score</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tesseract</td>
<td>-20 points each</td>
<td>1. Refer to Tesseract example in preceding pages.</td>
</tr>
<tr>
<td></td>
<td>-40 points maximum</td>
<td></td>
</tr>
<tr>
<td>Energy Reactor</td>
<td>50 points each</td>
<td>1. Opponent’s Energy Reactor must be within and touching your own scoring area to be awarded points.</td>
</tr>
<tr>
<td></td>
<td>50 points maximum</td>
<td>2. Energy Reactor in contact with the scoring zone perimeter line will not be awarded points.</td>
</tr>
<tr>
<td>Neodymium Ore</td>
<td>20 points each</td>
<td>1. Neodymium Ore must be within and touching your scoring area to be awarded points.</td>
</tr>
<tr>
<td></td>
<td>40 points maximum</td>
<td>2. Neodymium Ore in contact with the scoring zone perimeter line will not be awarded points.</td>
</tr>
<tr>
<td>Supplies</td>
<td>10 points each</td>
<td>1. Supply balls must be within and touching your scoring area to be awarded points.</td>
</tr>
<tr>
<td></td>
<td>90 points maximum</td>
<td>2. Supply balls in contact with the scoring zone perimeter line will not be awarded points.</td>
</tr>
</tbody>
</table>

Surprise Rules and Scoring
Surprise rules and point scores other than those mentioned in this Challenge Manual will be introduced on the competition day.
COMPETITION RULES

Rules and Regulations

General:
1. During the competition, all teams must look after their own personal property, team construction and materials. 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.
2. 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.
3. All students and Teacher Mentors (TMs) will be quarantined from each other during the competition preparation time. No communication between TMs and students is allowed during this period.
4. All decisions by the competition officials and organising parties are final.

IDE Robotics, IDE Sprint
1. Teams are expected to bring their own LEGO® Mindstorms NXT or EV3 Sets, batteries and laptops. **No sharing of robots between teams allowed.**
2. Each robot is only allowed to use one controller (either Mindstorms NXT or Mindstorms EV3). 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)**

<table>
<thead>
<tr>
<th>NXT Large Motor</th>
<th>NXT Light Sensor</th>
<th>NXT Touch Sensor</th>
<th>NXT Ultrasonic Sensor</th>
<th>NXT Color Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>EV3 Large Motor</td>
<td>EV3 Light/Color Sensor</td>
<td>EV3 Touch Sensor</td>
<td>EV3 Ultrasonic Sensor</td>
<td>EV3 Gyro Sensor</td>
</tr>
<tr>
<td>EV3 Medium Motor</td>
<td>Hi-Technic Color Sensor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Only LEGO® branded elements may be allowed to be used for the robot.
5. Before each run, an inspector will check the robots for any non-LEGO® or non-approved parts/accessories. Team may face possible disqualification or point deduction if the parts cannot be removed.
6. 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.
7. Teams have 1 hour for IDE Sprint, 4 hours for IDE Robotics to prepare their robots on the competition day. Following which the robots will be caged in and no further modifications may be made.
8. Robots are to be completely autonomous and finish the mission without interference from any external influence.

IDE Mech Wars
1. Teams are expected to bring their own LEGO® Mindstorms NXT or EV3 Sets, batteries and laptops. **No sharing of robots between teams allowed.**
2. Each team will comprise of exactly 3 robots.
3. Each robot is allowed to use one controller (either Mindstorms NXT or Mindstorms EV3). However, the number of motors and sensors is not restricted. No multiplexing of motor or sensor ports allowed.
4. List of Approved Sensors and Motors ([Table 1](#))
5. Only LEGO® branded elements may be allowed to be used for the robot.
6. Before each run, an inspector will check the robots for any non-LEGO® or non-approved parts/accessories. Team may face possible disqualification or point deduction 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. Robots that are damaged or deemed unplayable during a Mech Wars round are not allowed to be recovered or retrieved during gameplay.
9. Playfield elements that leave the playfield during a Mech Wars round will not be returned to the playfield in the same round.
10. Teams are NOT allowed to share robots and the organiser reserves the right to disqualify any offenders.

IDE Maker
1. Hardware: Any Arduino official board model, present or retired, including, Uno, Mega 2560, Leonardo, Mini, Nano etc.
2. Programming: No limitation on software or programming language.
3. Additional shields, add-on blocks are allowed.
4. Teams are to submit a project video (max 2 mins) one week before the competition.
5. Teams are to prepare their own project poster (max A1 size) on the competition day. Poster stand will be provided.

IDE Junior Maker
1. Hardware: Only BBC micro:bit is allowed.
2. Programming: No limitation on software or programming language.
3. Additional shields, add-on blocks are allowed.
4. Teams are to submit a project video (max 2 mins) one week before the competition.
5. Teams are to prepare their own project poster (max A1 size) on the competition day. Poster stand will be provided.

IDE Challenge
1. Teams are only allowed to use materials provided by the organisers on the day of the competition.
2. Teams are not allowed to bring their prototypes created during the preparation week to the competition.
3. Electrical and dangerous tools are not allowed to be used.
4. The final product must be an original construct by the team.
School and Team Eligibility

Primary Category
- Age 9 to 12 years (in 2018)
- IDE Robotics, IDE Junior Maker, IDE Sprint

Secondary Category
- Age 13 to 16 years (in 2018)
- IDE Challenge, IDE Robotics, IDE Maker, IDE Sprint, IDE Mech Wars

Team Registration
- Up to 3 students and 1 Teacher Mentor (TM) per team.
- The same TM can be registered for multiple teams
- No restrictions on number of teams registered per school/organisation.

Please take note of the following registration rules:
1. Students are to bring along a photo ID during the competition day in order to perform name and age verification.
2. Teams may choose to cater lunch sets for students and teachers using the registration form.
3. The organizers reserve the right to reject any teams that do not fulfill the registration criteria.
4. Special invoicing arrangements may be made using our registration form.
5. No changes to the registration form will be allowed after 28 Feb 2018.

Judging
A panel of judges will be invited for this competition. They will judge each team based on a variety of factors, which include the team’s strategy as well as the innovation, design and engineering aspects of their construction.
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 Challenge Competition. All cash prizes are in the form of vouchers. Prizes are subjected to adjustment by the organisers and will be updated on the competition website.

IDE Challenge, IDE Maker, IDE Junior Maker Awards

<table>
<thead>
<tr>
<th>Awards</th>
<th>Prizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Championship Award</td>
<td>First to Third: Competition Trophy, Medals, Cash Vouchers</td>
</tr>
<tr>
<td>Innovation Award</td>
<td>Trophy &amp; Medals</td>
</tr>
<tr>
<td>Design Award</td>
<td>Trophy &amp; Medals</td>
</tr>
<tr>
<td>Engineering Award</td>
<td>Trophy &amp; Medals</td>
</tr>
<tr>
<td>Judges’ Special Mention Award</td>
<td>Certificates</td>
</tr>
</tbody>
</table>

IDE Robotics, IDE Sprint, IDE Mech Wars Awards

<table>
<thead>
<tr>
<th>Awards</th>
<th>Prizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Competition Score</td>
<td>First to Third: Competition Trophy, Medals, Cash Vouchers</td>
</tr>
<tr>
<td></td>
<td>Fourth to Tenth Position: Ranking Certificates</td>
</tr>
</tbody>
</table>

*The organisers may at their discretion, modify the category of awards, and/or the award itself depending on sponsorship level.*
IMPORTANT DATES AND DETAILS

**Competition Dates**

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE Challenge Mission Announcement</td>
<td>7 March 2018</td>
<td>(Through email and website updates)</td>
</tr>
<tr>
<td>IDE Maker Video Submission</td>
<td>7 March 2018, 12 pm</td>
<td></td>
</tr>
<tr>
<td>IDE Junior Maker Video Submission</td>
<td>7 March 2018, 12 pm</td>
<td></td>
</tr>
<tr>
<td>IDE Robotics Bootcamp (Pri)</td>
<td>14 March 2018</td>
<td>(12pm to 5pm)</td>
</tr>
<tr>
<td>IDE Robotics Bootcamp (Sec)</td>
<td>14 March 2018</td>
<td>(12pm to 5pm)</td>
</tr>
<tr>
<td>IDE Robotics Mission Announcement</td>
<td>15 March 2018</td>
<td>(At competition venue)</td>
</tr>
<tr>
<td>Actual Competition Day</td>
<td>15 March 2018</td>
<td>(8.30am to 4.30pm)</td>
</tr>
</tbody>
</table>

**Competition Venue**

Anglican High School  
600 Upper Changi Rd  
Singapore 487012
**Event Schedule**

Sample schedule is provided below and is subject to changes:

<table>
<thead>
<tr>
<th>Time</th>
<th>IDE Robotics</th>
<th>IDE Challenge</th>
<th>IDE Sprint</th>
<th>IDE Mech Wars</th>
<th>IDE Maker (Arduino)</th>
<th>IDE Junior Maker (Microbit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Registration Begins</td>
<td></td>
</tr>
<tr>
<td>0830</td>
<td></td>
<td>Welcome &amp; Briefing</td>
<td>Preparation Time</td>
<td></td>
<td>Booth Setup</td>
<td></td>
</tr>
<tr>
<td>0900</td>
<td></td>
<td>Preparation Time</td>
<td>Preparation Time</td>
<td></td>
<td>Maker Talk</td>
<td></td>
</tr>
<tr>
<td>0930</td>
<td>Preparation Time</td>
<td>Preparation Time</td>
<td>Competition Run</td>
<td>Preparation Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Booth Setup</td>
<td></td>
</tr>
<tr>
<td>1030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maker Talk</td>
<td></td>
</tr>
<tr>
<td>1100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Booth Setup</td>
<td></td>
</tr>
<tr>
<td>1130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maker Project Showcase</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prize Presentation &amp; Photo Taking *</td>
</tr>
<tr>
<td>1230</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lunch Break (Hall is Quarantined)</td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>Preparation Time</td>
<td>Preparation Time</td>
<td>Competition Run</td>
<td>Preparation Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Booth Setup</td>
<td></td>
</tr>
<tr>
<td>1400</td>
<td>Competition Run</td>
<td>Competition Run</td>
<td>Competition Run</td>
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<tr>
<td>1430</td>
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<tr>
<td>1500</td>
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<td></td>
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<tr>
<td>1530</td>
<td></td>
<td>Tabulation of Scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td></td>
<td>Prize Presentation + Photo Taking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1630</td>
<td></td>
<td>Event Ends at 4.30pm</td>
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</tbody>
</table>

* Participants may choose to depart from competition venue after prize presentation and before lunch
Registration

Registration for IDE2018 closes on **28 February 2018**.

Please take note of the following registration rules:

1. Teams taking part in the IDE Robotics Competition may choose to sign up for the half day Robotics Bootcamp training. A fee of $100/- will apply per team for this training. All fees will be billed at the end of the course through e-invoice to the school.
2. Teams that wish to take advantage of the early bird rates may choose to submit team registration before early bird deadline (31 Dec 2017) and confirm team member details by registration deadline (28 Feb 2018).
3. The organizers reserve the right to reject any teams that do not fulfill the registration criteria.
4. Special invoicing arrangements may be made using our registration form.

To register for this competition, please visit our website at: [www.ideseries.org](http://www.ideseries.org)

Contacts

For competition enquiries, contact: ide@nullspace.com.sg

For urgent matters:
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Email: alanyong@nullspace.com.sg