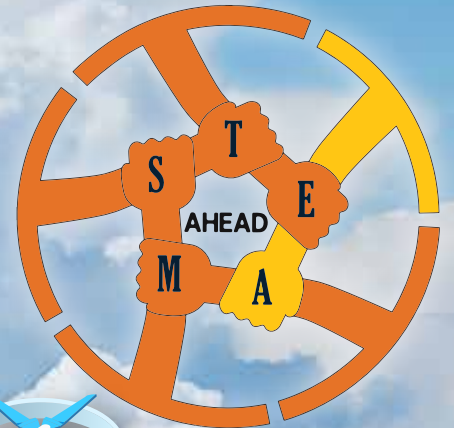




# SHENZHEN STEAM AHEAD 2025

INFO PACK  
INTERNATIONAL



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# President's STEAM AHEAD 2025 Message

STEAM stands for **Science, Technology, Engineering, Arts, and Mathematics**. **STEAM AHEAD** SIMCC's 21st-century educational initiative that unites our international academic competitions to educate students and provide them with global exposure to future career pathways in these dynamic fields.

As the first initiative to combine **five International academic competitions**—IJMO, VIJSO, IJCO, IJIO, and IJAO In one location, STEAM AHEAD offers students a unique opportunity to:

- Develop new skills through collaboration
- Gain recognition alongside new team members,
- Win awards that celebrate both individual and team excellence

Your excellence is not just in what you achieve — but in how you help others rise with you. At SIMCC, every scholarship is a step toward shared success.

This year, STEAM AHEAD 2025 will be hosted in **Shenzhen**, China's **Futuristic Silicon Valley**—the world's most advanced city and manufacturing hub. I first visited **Shenzhen** in 1990 while posted to Hong Kong as the Asia Pacific Sales Manager by Whirlpool Corporation. Back then, the city had just grown to 875,000 residents. Today, Shenzhen is home to 13.5 million people, a testament to its extraordinary transformation from a humble fishing village of 20,000.

As part of the STEAM AHEAD 2025 educational tours, contestants will visit world-class factories to and witness peaceful applications of cutting-edge technologies—robots, drones, and AI—that are enhancing life and shaping the future. STEAM AHEAD will continue to embrace innovation, applying the latest technologies to solve global challenges and improve lives.

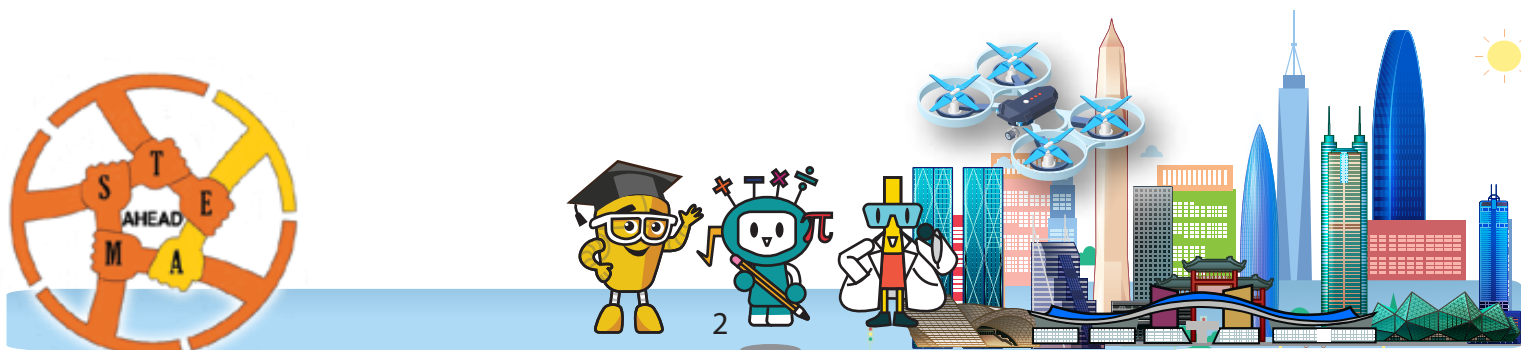


## A Global Ecosystem of Servant Leadership

In partnership with 54 Country Council Partners (CCPs), the IJHS Global Student Leadership Council (GSLC), 18 IJHS Country Student Leadership Councils (CSLCs), and numerous training and corporate partners, SIMCC and Scholastic Trust Singapore have built a global ecosystem rooted in servant leadership and the transformative philosophy that Leaders Give, Givers Grow. Through academic contests, scholarships, and leadership development programs, we empower students and educators to:

- Uplift communities
- Foster cross-cultural collaboration
- Drive systemic change in education

Together, we are cultivating a new generation of servant leaders who lead with empathy, purpose, and a commitment to giving back.



As we forge ahead into 2025, let us remember: True leadership is not measured by accolades alone, but by the lives we touch and the futures we shape. STEAM AHEAD is more than a competition—it is a movement of hope, innovation, and service. Let us give. Let us grow. Let us lead.

With best regards,

**Henry Ong**

President, SIMCC & Scholastic Trust Singapore





# STEAM AHEAD Overview

STEAM stands for Science, Technology, Engineering, Arts and Mathematics. STEAM AHEAD is our initiative to combine our international academic competitions to educate students and bring them international exposure to possible career choices in these fields.

So, STEAM AHEAD is the first to combine 5 international academic competitions in one location and offer multiple opportunities for students to develop new skills, gain recognition, and win awards.

The PAExS Star winners will be awarded a PAExS Star trophy and certificate plus get inducted into the International Junior Honor Society (IJHS) and win a full scholarship to attend the Young Achievers Leadership Academy (YALA) 2026.

STEAM AHEAD 2025 is brought to you by SIMCC in collaboration with Scholastic Trust Singapore Foundation, Singapore International Children Media (SICM) and our Country Council Partners (CCPs) in 54 countries and territories.

At each STEAM AHEAD event, we will start to promote linkages across the subjects so that it will upskill students and boost their interest in STEAM.

Our goal is to help our students get into professional paths that are future proof. Our society's demand for technically driven roles is rising and therefore it is crucial that students are encouraged to get qualifications in Math, Science, Technology, Arts and related fields. By getting qualifications that will allow students to work in innovative fields, they are guaranteed to have fulfilling and well-paid professions.

The following are the awards participants can stand to win:

1. IJMO International Junior Math Olympiad Individual Award
2. VIJSO Vanda International Junior Science Olympiad Individual Award
3. VIJSO Vanda International Junior Science Olympiad Team Award
4. IJIO International Junior Informatics Olympiad Individual Award
5. IJIO International Junior Informatics Olympiad Team Award
6. IJCO International Junior Cybersecurity Olympiad Individual Award
7. IJCO International Junior Cybersecurity Olympiad Team Award
8. IJAO International Junior Arts Olympiad Individual Award
9. IJMO Overall Champion, Runner-up, and 2nd Runner-Up in each grade level
10. VIJSO Overall Champion, Runner-up, and 2nd Runner-Up in each grade level
11. IJCO Overall Champion, Runner-up, and 2nd Runner-Up in each grade level
12. IJIO Overall Champion, Runner-up, and 2nd Runner-Up in each grade level
13. President's Award for Excellence in STEAM (PAExS) for gold and above Individual winners in any of the two competitions from IJMO, VIJSO, IJCO, IJIO & IJAO.
14. Winners of three gold and above awards will be presented with PAExS Star Award. for gold and above Individual winners in any of the three competitions from IJMO, VIJSO, IJCO, IJIO & IJAO.

For any contest where there are less than 50 contestants in the grade level, we will not issue overall championship awards.







## About IJMO

The International Junior Math Olympiad (IJMO) is an international mathematics competition which is held annually in different countries globally. IJMO is organised by SIMCC in collaboration with country council partners in over 50 countries to identify and encourage potential young math talents in every SIMCC participating country.

### Objectives

IJMO aims to provide a global platform for students to interact and compete against their worthy opponents. IJMO is the ideal platform to showcase every student's potential and talent in math in the international math competitions arena!

IJMO empowers students with deep conceptual understanding and logical thinking skills beyond Grade-level. This effectively stretches every student's potential beyond Grade-level, allowing them to better apply much higher level logical and analytical skills to solve challenging Math Olympiad problems. Questions in IJMO are carefully designed to develop every student's higher level of conceptual understanding and logical thinking skills.

### IJMO Prerequisites for the competition

- **IJMO registration is limited to 1,500 slots, allocated strictly on a first-come, first-served basis. We regret to inform you that no additional slots can be made available, as the capacity is restricted by the examination venue.**
- Participants who achieved Silver and above in AMO 2024 and SASMO 2025 qualify to join IJMO directly without training. Those who achieved a Bronze in AMO 2024 and SASMO 2025 may join, but only through the IJMO training program.
- For SMGF 2025, winners of Silver and above may participate without training, while Bronze awardees may join with training.
- For SIMOC 2025, winners of Bronze and above may join without training. Those who received an Honourable Mention (HM) are also eligible, but they must attend the training program.



# Format

**International Junior Math Olympiad – (GRADES 1 TO 12)**

**Competition Date: 13th Dec 2025 Time: 9am to 2pm**

**Duration: 90 minutes**

Contestant starts with 20 bonus points.

Competition paper for each level contains 30 questions.

Starting bonus: 20 points

## Section A

Questions 1 to 10

Correct = 2, No Answer = 0, Wrong = -1

Total score: 20 points

## Section B

Questions 11 to 20

Correct = 3, No Answer = 0, Wrong = -1

Total score: 30 points

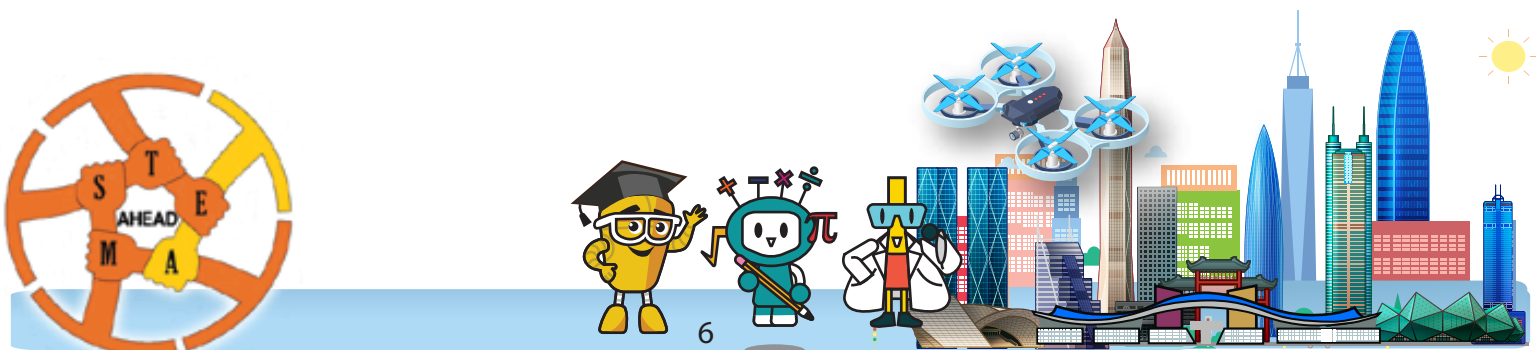
## Section C

Questions 21 to 30

Correct = 5, No Answer = 0, Wrong = 0

Total score: 50 points

Total Score: 120 points



# Syllabus

IJMO reserves the rights to change the syllabus without any prior notice.

## GRADES 1-4 (PRIMARY 1-4)

Arithmetic and Statistics  
Geometry and Mensuration  
Solving word problems using model method (or any other non-algebraic methods)  
Non-routine problem solving (including number patterns, divisibility tests, spatial visualisation, logic problems and simple cryptarithms)

## GRADES 5-6 (PRIMARY 5-6)

Arithmetic and Statistics  
Geometry and Mensuration  
Solving word problems using model method (or any other methods including algebra)  
Non-routine problem solving (including number patterns, divisibility tests, spatial visualisation, logic problems and cryptarithms)

## GRADE 7 (SECONDARY 1)

Arithmetic and Algebra  
Geometry, Graphs and Mensuration  
Statistics  
Non-routine problem solving (including number patterns, divisibility tests, spatial visualisation, logic problems and cryptarithms)

## GRADE 8 (SECONDARY 2)

Arithmetic and Algebra  
Geometry, Graphs and Mensuration  
Pythagoras' Theorem  
Statistics  
Non-routine problem solving (including number patterns, divisibility tests, spatial visualisation, logic problems and cryptarithms)

## GRADES 9-12 (SECONDARY 3-4, JC1-2)

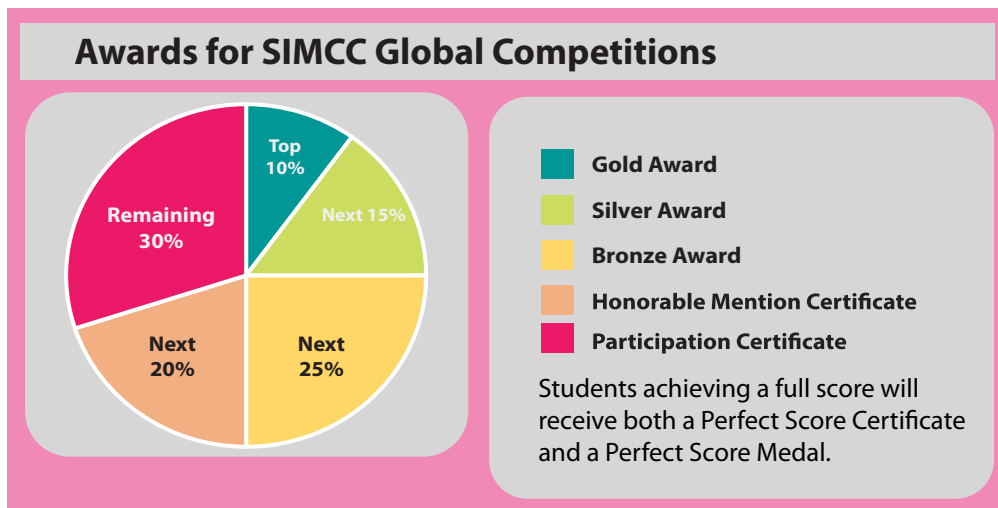
Arithmetic and Algebra  
Geometry, Graphs and Mensuration  
Pythagoras' Theorem and Trigonometry  
Statistics and Probability  
Non-routine problem solving (including number patterns, divisibility tests, spatial visualisation, logic problems and cryptarithms)





# Awards

## IJMO Individual Awards

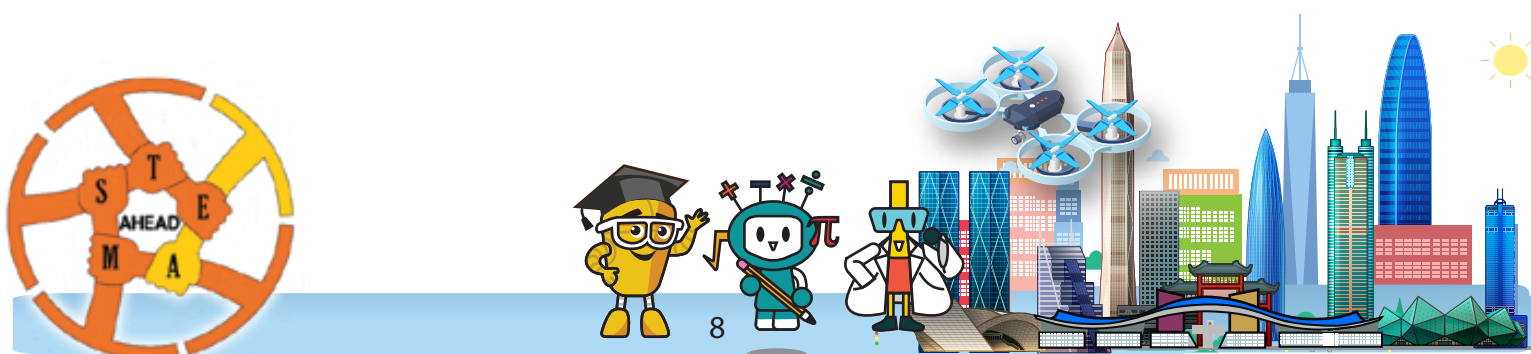


Students who achieve a perfect score will receive a gift voucher of up to SGD 100, which will be adjusted proportionally if the total allocation of SGD 1000 is exceeded.



**STEAM AHEAD voucher terms and conditions:**

1. This voucher expires 12 months from the month of issue.
2. This voucher can be used to participate on any of SIMCC competitions, trainings or tour packages and its value is equivalent to the Singapore currency as printed.
3. This voucher cannot be used in conjunction with other voucher.
4. This voucher is not refundable and cannot be replaced if lost, damage or expired.
5. This voucher is not exchangeable for cash and any unused balance will not be refundable.
6. This voucher is not legal tender and cannot be deposited into any bank account.
7. SIMCC reserves the right to vary amend the privileges or terms & conditions without prior notice.



# Certificates & Medals



# Awards

## IJMO Overall Championship Awards

IJMO Overall Championship awards are given to the top 3 gold award winners per grade level from grades 1 to 11/12 based on the Math Olympiad Individual Score. They will be announced during the award ceremony.

### Awards (STEAM AHEAD GIFT VOUCHER)

#### Overall Champion

- Trophy
- Certificate
- IJHS induction
- YALA Gold Scholarship 2026
- SGD250 Gift Voucher

#### Overall 2nd Runner-up

- Trophy
- Certificate
- SGD100 Gift Voucher

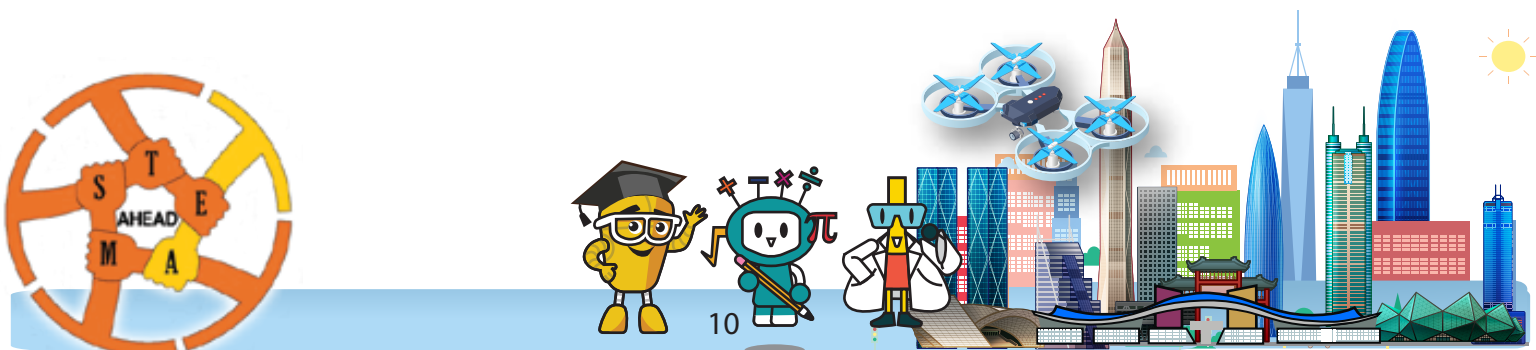
#### Overall Runner-up

- Trophy
- Certificate
- IJHS induction
- SGD150 Gift Voucher

Please kindly note that Overall Championship will only be awarded for division or grade that has more than 50 participants.



**Overall Championship Trophy**

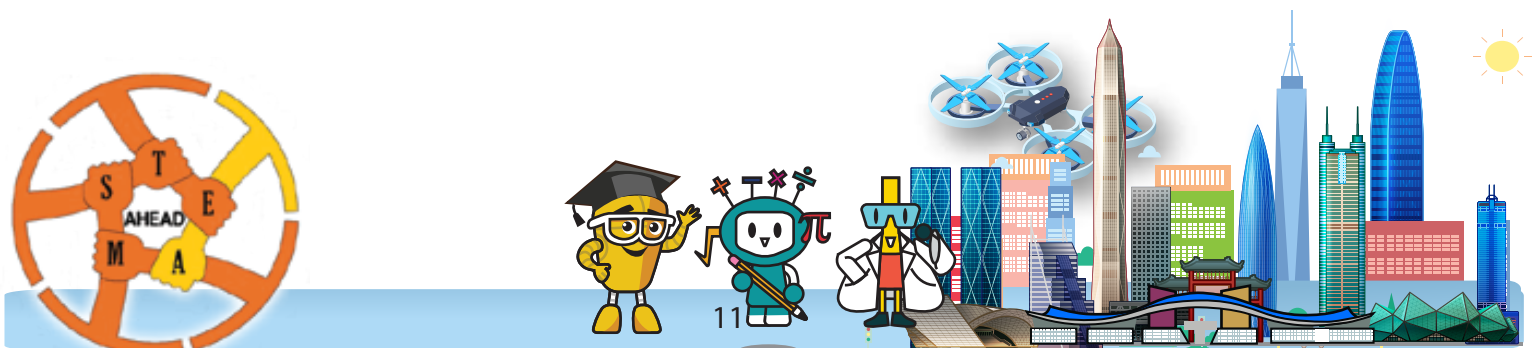




# Awards

## STEAM AHEAD Gift Voucher Terms and Conditions:

1. This voucher expires 12 months from the month of issue.
2. This voucher can be used to participate in any of SIMCC competitions and training or purchase books, games or tour packages and its value is equivalent to the Singapore currency as printed.
3. This voucher cannot be used in conjunction with any other voucher.
4. This voucher is not refundable and cannot be replaced if lost, damage or expired.
5. This voucher is not exchangeable for cash and any unused balance will not be refundable.
6. This voucher is not legal tender and cannot be deposited into any bank account.
7. SIMCC reserves the right to vary amend the privileges or any terms & conditions without prior notice.



# Rules for IJMO Overall Championship Tiebreaker:

## IJMO Overall Championship Tiebreaker Rules

**Tie Situation:** In the event of a tie for the IJMO Overall Championship, a tiebreaker round will be conducted.

**Tiebreaker Schedule:** The tiebreaker will be held on December 14th.

**Location:** Will be announced later

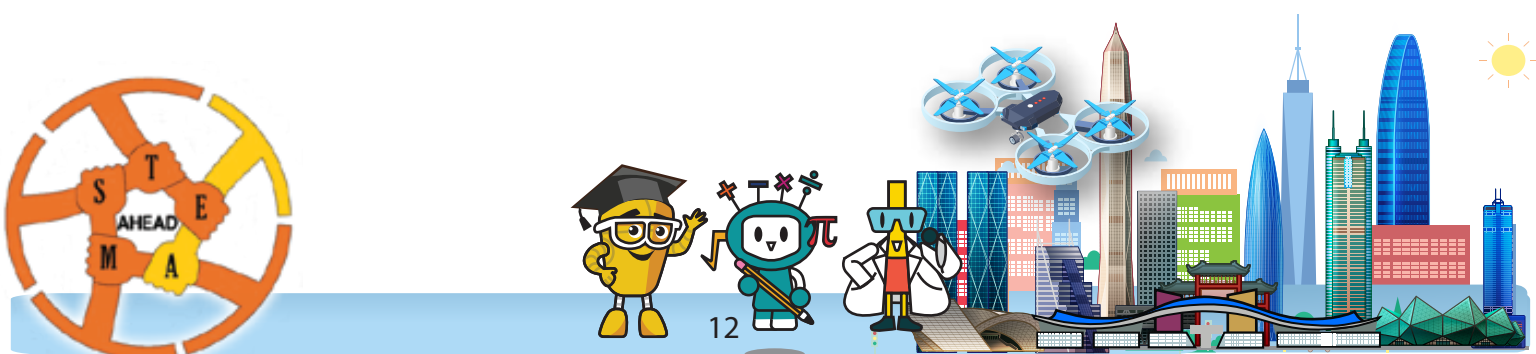
**Notification:** All tied contestants will be informed of the tiebreaker on December 14th. Notifications will be delivered via the Country Council Partner.

**Tiebreaker Format:** During the tiebreaker round, each tied contestant will receive a similar question. The first contestant to correctly answer the question will be crowned the winner.

**No-show Consequence:** Contestants who fail to attend the tiebreaker will automatically forfeit their chance for the higher award. Attendance is crucial for eligibility.

**Decision Finality:** The decision made based on the results and timing of the tiebreaker will be final. No further appeals or challenges regarding the outcome will be entertained.

Contestants are encouraged to familiarize themselves with these rules and ensure their availability for the tiebreaker round. Best of luck to all participants.





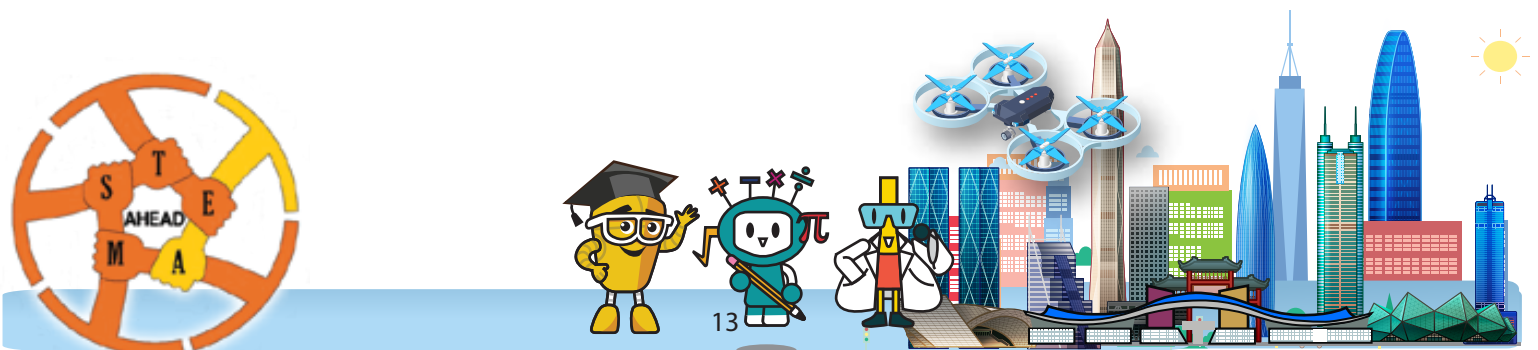
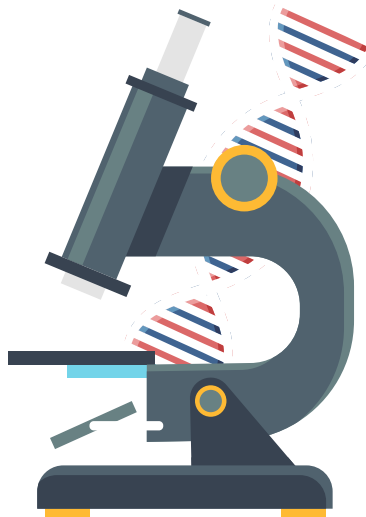
# About VIJSO

The Vanda International Junior Science Olympiad is an annual event held in STEAM AHEAD. This competition places a strong emphasis on students' abilities to engage in critical and creative thinking, allowing them to uncover hidden information to assist in problem-solving.

VIJSO caters to students ranging from primary 3 to secondary 4 (Grade 3 to Grade 11). We are using Singapore Science (i.e., Cambridge) as the basic syllabus. However, since this is at the Olympiad level, we will have more application based questions. We are not testing the students on understanding different classroom experiments or Terminologies. We emphasize Problem-Solving and application.

One distinctive feature of VIJSO is its significant emphasis on teamwork within the competition. The gold-winning group showcases exceptional levels of collaboration and mutual support. These skills hold high value, as many of our previous winners have successfully gained admission to top schools by sharing the experiences they acquired through their participation in the Vanda International Junior Science Olympiad during admission interviews.

The competition questions are built upon a solid foundation of scientific knowledge and methodology. They encourage the development of reasoning and analytical skills, decision-making and problem solving abilities, flexibility in responding to diverse contexts, and the cultivation of an open and inquisitive mind. All of these aspects are aligned with the essential 21st-century competencies.





# Objectives

## **IGNITE YOUR PASSION**

VIJSO ignites students' hidden passion for science! Vanda provides a range of interesting content in questions to spark their curiosity and encourages them to venture deeper into the world of science.

## **AN OPPORTUNITY FOR ALL**

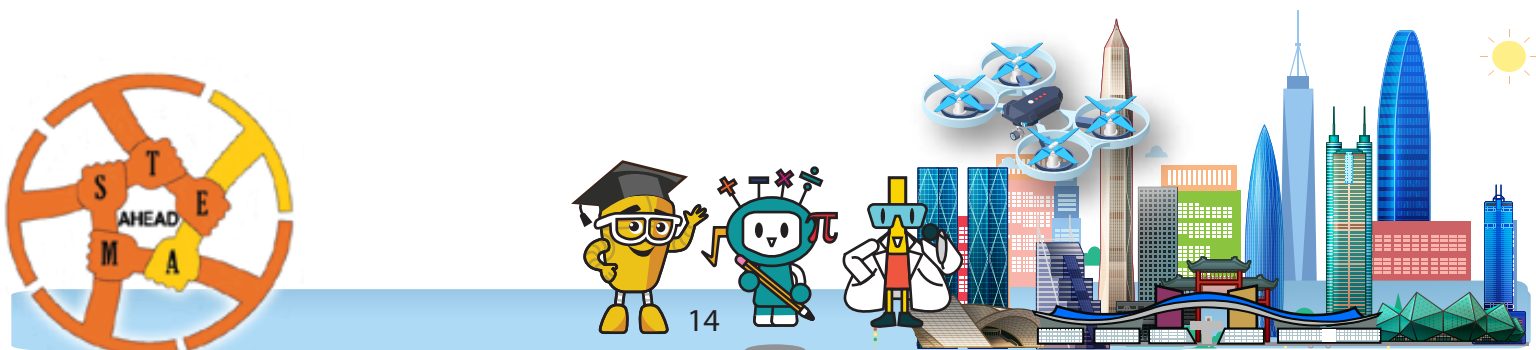
VIJSO exposes students to a Science Olympiad Competition that follows closely to their syllabus and their level of content learned. This gives them the confidence to take part in more challenging science competitions and start scoring A\* in Science.

## **REACHING GREATER HEIGHTS**

VIJSO helps students to be comfortable with various science Olympiad papers in the right environment. VIJSO wants students to utilize this experience to continue to take part in more challenging Science Olympiad Competitions in the future.

# Prerequisites for the Competition

- Bronze and above winners for VNJSO 2025 from each country are invited to represent their country.
- Honorable mention winners can join if they attend the Vanda training.



# Syllabus

SIMCC reserves the rights to change the syllabus without any prior notice.

## GRADES 3-4 (PRIMARY 3-4)

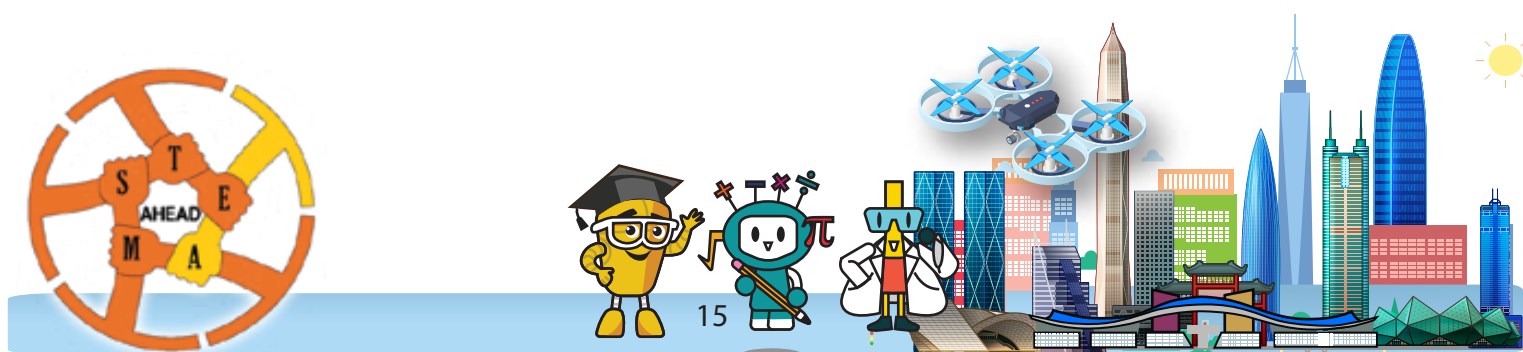
| Themes       | Topics                                                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------|
| Diversity    | 1. Diversity of living and nonliving things (General characteristics and classification)<br>2. Diversity of materials |
| Cycles       | 3. Cycles in plants and animals (Life cycles)<br>4. Cycles in matter and water (Matter)                               |
| Systems      | 5. Plant system (Plant parts and functions)<br>6. Human system                                                        |
| Interactions | 7. Interaction of forces (Magnets)                                                                                    |
| Energy       | 8. Energy forms and uses (Light and heat)                                                                             |

## GRADES 5-6 (PRIMARY 5-6)

| Themes       | Topics                                                                                                                     |
|--------------|----------------------------------------------------------------------------------------------------------------------------|
| Cycles       | 1. Cycles in plants and animals (Reproduction)<br>2. Cycles in matter and water (matter and water)                         |
| Systems      | 3. Plant system<br>4. Human system<br>5. Cell system<br>6. Electrical system                                               |
| Interactions | 7. Interaction of forces (Frictional force, gravitational force, force insprings)<br>8. Interaction within the environment |
| Energy       | 9. Energy forms and uses (Photosynthesis)<br>10. Energy conversion                                                         |

## GRADE 7-8 (SECONDARY 1-2)

| Themes                   | Topics                                                                                                                                                                                      |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Scientific Endeavour | 1. The Scientific Endeavour                                                                                                                                                                 |
| Diversity                | 2. Exploring Diversity of Matter by its Physical Properties<br>3. Exploring Diversity of Matter by its Chemical Composition<br>4. Exploring Diversity of Matter using Separation Techniques |
| Models                   | 5. Ray Model of Light<br>6. Model of Cells - the Basic Unit of Life<br>7. Model of Matter - The Particulate Nature of Matter<br>8. Model of Matter - Atoms and Molecules                    |
| Interactions             | 9. Application of Forces and Transfer of Energy<br>10. Transfer of Heat Energy and its Effects<br>11. Chemical Changes<br>12. Interactions within Ecosystems                                |
| Systems                  | 13. Electrical Systems<br>14. Human Digestive System<br>15. Transport Systems in Living Things<br>16. Human Sexual Reproductive System                                                      |



## GRADE 9 (SECONDARY 3)

| Themes    | Topics                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physics   | <p>I. MEASUREMENT</p> <p>1. Physical Quantities, Units and Measurement</p> <p>II. NEWTONIAN MECHANICS</p> <p>2. Kinematics</p> <p>3. Dynamics</p> <p>4. Mass, Weight and Density</p> <p>5. Turning Effect of Forces</p> <p>6. Pressure</p> <p>7. Energy, Work and Power</p> <p>III. THERMAL PHYSICS</p> <p>8. Kinetic Model of Matter</p> <p>9. Transfer of Thermal Energy</p> <p>10. Thermal Properties of Matter</p> |
| Chemistry | <p>I. EXPERIMENTAL CHEMISTRY</p> <p>1. Experimental Chemistry</p> <p>II. ATOMIC STRUCTURE AND STOICHIOMETRY</p> <p>2. The Particulate Nature of Matter</p> <p>3. Formulae, Stoichiometry and the Mole Concept</p> <p>III. CHEMISTRY OF REACTIONS</p> <p>4. Energy Changes</p> <p>5. Electrolysis</p> <p>6. Chemical Reactions</p>                                                                                      |
| Biology   | <p>I. PRINCIPLES OF BIOLOGY</p> <p>1. Cell Structure and Organisation</p> <p>2. Movement of Substances</p> <p>3. Biological Molecules</p> <p>II. MAINTENANCE AND REGULATION OF LIFE PROCESS<sup>ES</sup></p> <p>4. Nutrition in Humans</p> <p>5. Nutrition in Plants</p> <p>6. Transport in Flowering Plants</p> <p>7. Transport in Humans</p> <p>8. Respiration in Humans</p>                                         |





## GRADES 10-11 (SECONDARY 4/5, JC 1)

| Themes    | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physics   | <p>I. WAVES</p> <ol style="list-style-type: none"> <li>1. General Wave Properties</li> <li>2. Light</li> <li>3. Electromagnetic Spectrum</li> <li>4. Sound</li> </ol> <p>II. ELECTRICITY AND MAGNETISM</p> <ol style="list-style-type: none"> <li>5. Static Electricity</li> <li>6. Current of Electricity</li> <li>7. D.C. Circuits</li> <li>8. Practical Electricity</li> <li>9. Magnetism and Electromagnetism</li> </ol>                                                             |
| Chemistry | <p>I. CHEMISTRY OF REACTIONS</p> <ol style="list-style-type: none"> <li>1. Acids, Bases and Salts</li> </ol> <p>II. PERIODICITY</p> <ol style="list-style-type: none"> <li>2. The Periodic Table</li> <li>3. Metals</li> </ol> <p>III. ATMOSPHERE</p> <ol style="list-style-type: none"> <li>4. Air</li> </ol> <p>IV. ORGANIC CHEMISTRY</p> <ol style="list-style-type: none"> <li>5. Organic Chemistry</li> </ol>                                                                       |
| Biology   | <p>I. MAINTENANCE AND REGULATION OF LIFE PROCESSES</p> <ol style="list-style-type: none"> <li>1. Excretion in Humans</li> <li>2. Homeostasis</li> <li>3. Co-ordination and Response in Humans</li> </ol> <p>II. CONTINUITY OF LIFE</p> <ol style="list-style-type: none"> <li>4. Reproduction</li> <li>5. Molecular Genetics</li> <li>6. Inheritance</li> </ol> <p>III. MAN AND HIS ENVIRONMENT</p> <ol style="list-style-type: none"> <li>7. Organisms and their Environment</li> </ol> |



# Individual Round Format

**VANDA International Junior Science Olympiad – (GRADES 3 TO 10/11/12)**

**Competition Date: 14th Dec 2025 Time: 9am to 12pm**

**Duration: 90 minutes**

Contestant starts with 10 bonus points.

Competition paper for each level contains 25 questions.

Starting bonus: 10 points

## Section A

Questions 1 to 10

Correct = 2, No Answer = 0, Wrong = -1

Total score: 20 points

## Section B

Questions 11 to 20

Correct = 4, No Answer = 0, Wrong = 0

Total score: 40 points

## Section C

Questions 21 to 25

Correct = 6, No Answer = 0, Wrong = 0

Total score: 30 points

Total Score: 100 points



# Individual Round Competition Structure

## ✓ Section A – Conceptual Understanding and Foundational Knowledge

**Number of Questions: 10**

**Question Type: Single correct answer (MCQ)**

**Marking Scheme: +2 for correct, 0 for no answer, -1 point for wrong answer**

### **Purpose:**

To assess students' grasp of core science concepts (e.g., states of matter, forces, energy, cell structures, basic chemistry, ecosystems).

Focus on definitions, scientific facts, processes, and cause-effect relationships.

These are entry-level questions that test factual knowledge with minimal to moderate reasoning required.

### **Example Question Features:**

Straightforward diagrams.

Familiar experimental scenarios.

Textbook-based concepts.

## ✓ Section B – Reasoning and Analytical Thinking

**Number of Questions: 10**

**Question Type: Single correct answer (MCQ)**

**Marking Scheme: +4 for correct, 0 for wrong or no answer**

### **Purpose:**

To assess analytical reasoning, multi-step logic, data interpretation, and linking of different science concepts.

Introduce scientific tables, graphs, comparative analysis, and unfamiliar real-life contexts.

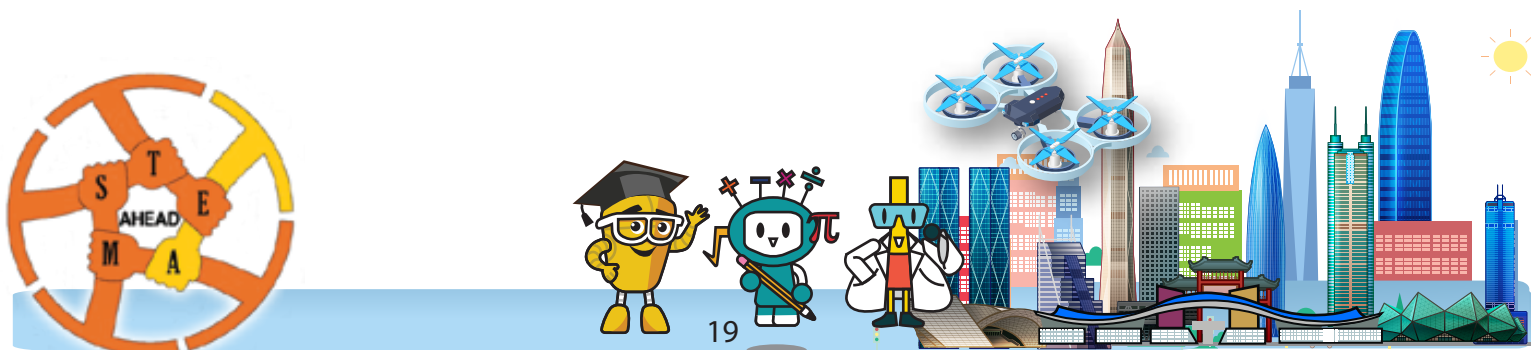
Questions may involve units, conversions, interpreting experiments, or drawing conclusions.

### **Example Question Features:**

Tables with nutrition data or speed of sound in different media.

Diagrams showing experimental setups or ecological interactions.

Students must process information before selecting the correct answer.



# Individual Round Competition Structure

## ✓ Section C – Application, Integration & Real-World Problem Solving

**Number of Questions: 5**

**Question Type: Multiple Correct Answer (MCA)**

**Marking Scheme: +6 for fully correct answer, 0 for any incorrect option selected or no answer.**

### **New Format:**

Students must evaluate all 4 options and select the correct combination (e.g., I and III, or all options).

There is no grouped answer choice like "Options I and III"; instead, each option must be individually selected by the student.

All options may be correct.

### **Purpose:**

To challenge higher-order thinking, real-life applications, interdisciplinary integration, and scientific inference.

Focus on reading scientific texts, interpreting graphs or chromatograms, and solving context-rich problems.

Evaluate scientific literacy, decision-making, and deep understanding.

### **Example Question Features:**

Case studies on breast milk vs formula, free diving, or food allergies with chromatograms.

Advanced experimental setups in electricity, genetics, energy transfer.

Application of theory to unfamiliar yet realistic situations.





## GRADE-SPECIFIC EXPECTATIONS

Grade Level    Expected Focus & Complexity

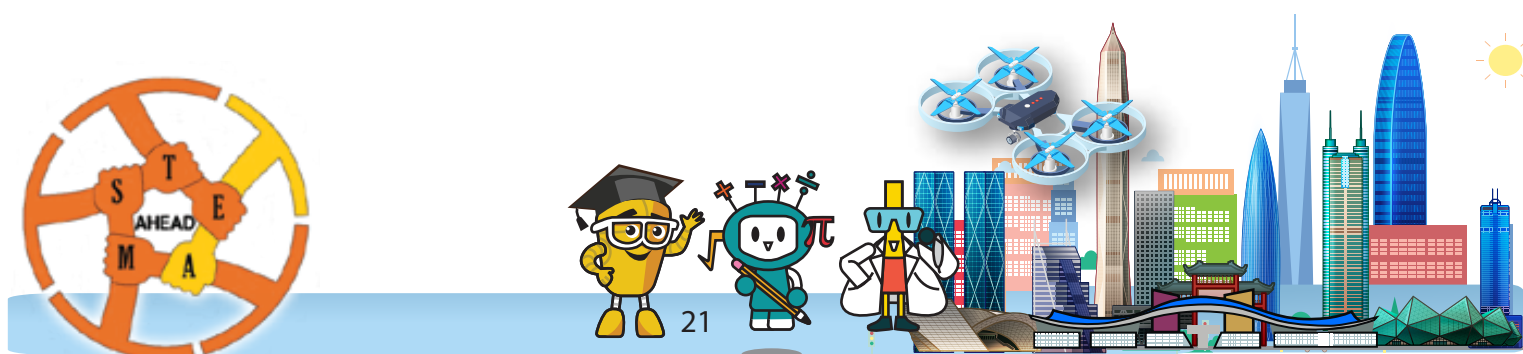
**Primary 3-4**    Test fundamental science awareness, observations, simple reasoning, and basic application. Include common school science topics (e.g., water cycle, magnetism, plants, animals, materials).

**Primary 5-6**    Higher complexity in experiments, early data analysis, graphs, and relationships (e.g., variables, circuits, food chains).

**Secondary 1-2** Greater emphasis on physics formulas, calculations, life sciences, cell structure, chemical changes, environmental science.

**Secondary 3-4** Integrate multi-discipline concepts. Questions may include biological molecules, electrochemistry, pressure, genetics, thermodynamics, Newtonian mechanics, etc. Include deeper data analysis and decision-based scenarios.

This structure ensures that the VIJSO remains a prestigious international competition that fosters scientific inquiry, logical reasoning, and creative problem-solving in students from around the world. Each section serves a distinct purpose in evaluating different dimensions of a student's scientific mind.





# VIJSO Team Challenge

## Overview

The Vanda International Junior Science Olympiad (VIJSO) Team Event is designed to develop and assess students' practical science application, engineering design, team collaboration, problem-solving skills, and scientific reasoning through an interdisciplinary, real-world STEM challenge. Each level (Grades 3–4, 5–6, 7–8, and 9–10/11/12) includes tasks that are hands-on, design-based, and culminate in testing, evaluation, and improvement of student-built models or devices.

## Objectives

- To foster collaborative STEM learning among students of similar academic levels.
- To promote creativity and innovation through real-life engineering challenges.
- To develop students' understanding of scientific principles through Practical Application.
- To build 21st-century competencies including critical thinking, teamwork, communication, and adaptability.



# Format of VIJSO Team Challenge

The entire paper consists of four main sections, each with a distinct purpose and marking weight:

**Competition Date: 14th Dec 2025 Time: 1pm to 530pm**

**Duration: 2 hours 30 minutes**

**Team size: typically 4 students per team**

## Section A

### Sketch and design rationale

- Tests design thinking, planning, and application of scientific principles.
  - Assess planning, design thinking, and understanding of material usage.
- Total score: 10 points

## Section B

### Free-response conceptual questions

- Assesses theoretical understanding and application of relevant science concepts.
  - Evaluate scientific understanding and ability to explain and justify design
- Total score: 20 points

## Section C

### Construction, testing, and modification

- Evaluates engineering skills, iterative and modification improvement, and data analysis.
  - Test hands-on ability, collaboration, engineering accuracy, scientific analysis.
- Total score: 65 points

## Section D

### Cleanup and sustainability practices

- Assesses environmental responsibility and discipline.
  - Promote responsibility, waste management, and reuse of materials.
- Total score: 5 points

**Total Score: 100 points**



# Structure for VIJSO Team

## Section A – Design and Sketch (10 marks)

### Purpose:

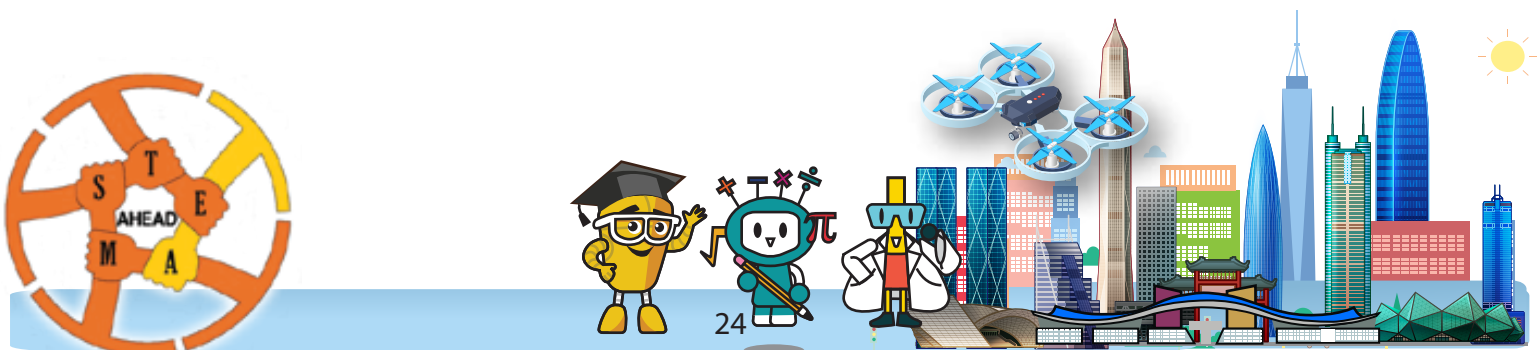
To assess planning, design thinking, and students' ability to visualize and rationalize before building.

- Students are required to draw a **labeled diagram** of their intended design (bridge, prosthetic, launcher, etc.) based on the theme.
- They must **justify their design choices**, focusing on structure, materials, and functionality.
- Diagrams must be **clear, labeled**, and scientifically sound.

### Instructions:

1. **Clearly list all required materials** in the paper.
  - All materials must be **recyclable or reusable** (e.g., cardboard, bottle caps, paper cups, rubber bands, plastic spoons, newspaper).
  - Avoid single-use plastics or non-recyclable items.
  - Provide **quantities** and size limits where applicable.
2. **Include a problem statement or design brief**, e.g.:

"Design a bridge that allows a toy car to cross a 20 cm gap without collapsing. The bridge must be made only using the materials provided."
3. **Specify design constraints**, such as:
  - Size limits
  - Load requirements
  - Height restrictions
  - Movement functionality
4. Students should be asked to:
  - **Draw a labelled sketch** of their design.
  - **Explain why** they chose specific materials or structures (e.g., "We used cardboard for the base because it distributes weight.").





## Section B – Conceptual Free-Response (20 marks)

### Purpose:

To evaluate students' ability to explain the scientific "why" behind their build decisions and understand theoretical principles.

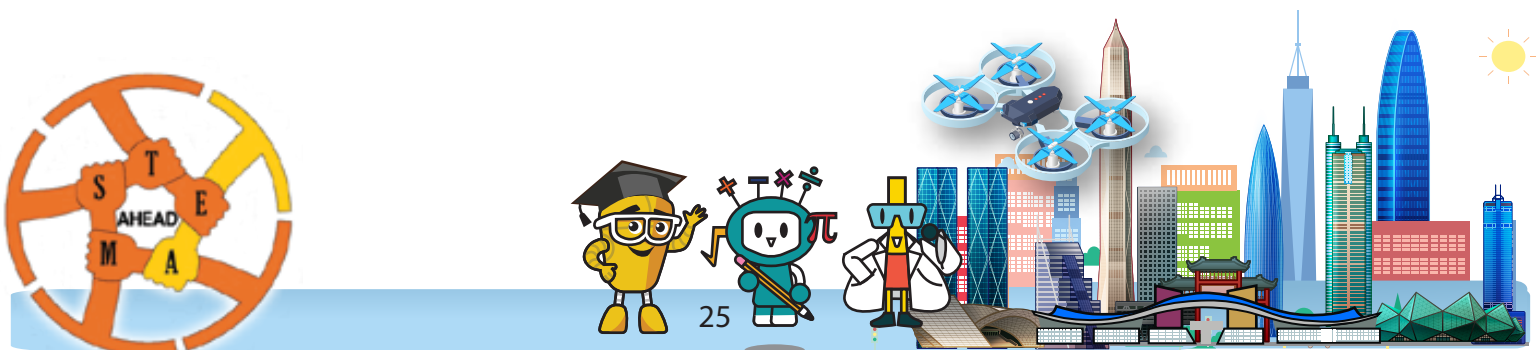
- Students answer **short-answer questions** that assess their understanding of the scientific concepts related to their build.
- Questions should explore areas such as:
  - Forces (tension/compression, gravity)
  - Stability and center of mass
  - Material science
  - Energy transfer
  - Biomechanics (for prosthetic leg tasks)

### Example by Grade:

- **Grades 3–4 (e.g., Paper Cup Launcher)**
  - What is a force?
  - Why does stretching a rubber band farther make the cup go farther?
- **Grades 5–6 (e.g., Windmill Water Lifter)**
  - How does wind energy turn into mechanical movement?
  - What makes your lifting arm more effective?
- **Grades 7–8 (e.g., Vehicle Bridge)**
  - What forces act on a bridge when a car crosses it?
  - How do triangles improve structural strength?
- **Grades 9–10/11/12 (e.g., Prosthetic Leg)**
  - How does center of mass affect balance in prosthetics?
  - Why is joint flexibility important in human leg design?

Encourage questions that require:

- Definitions and explanations
- Cause-and-effect reasoning
- Application of force, motion, energy, or biological functions



## Section C – Construction, Testing, Modification and Analysis (65 marks)

### Purpose:

To test real-world application of science and engineering concepts, encourage design iteration, and promote logical data-driven decision making. This is the core of the competition, testing students' hands-on ability.

#### • Construction - Build Phase (20 marks)

- Assess accuracy in building based on their sketch, structural integrity, and completeness.
- Evaluate if the build follows the original sketch, uses materials wisely, and is structurally complete.

#### • Initial Testing (15 marks)

- Evaluate whether the build meets functional criteria (e.g., bridge holds car, prosthetic supports steps).
- Test whether the device performs the task successfully (e.g., bridge holds, prosthetic walks, car travels distance).

#### • Modification & Improvement (10 marks)

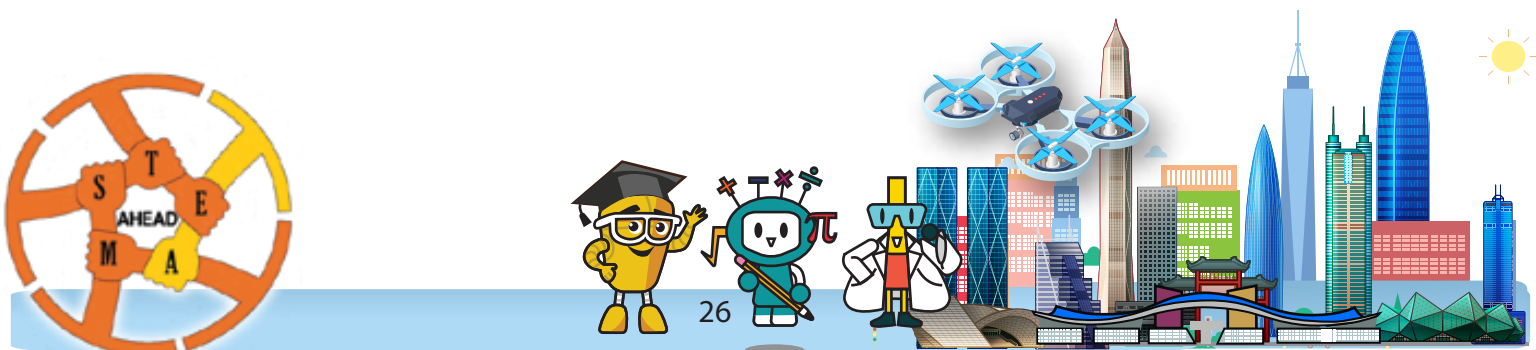
- Based on testing, students adjust their design to improve stability, function, and performance.
- After testing, students improve their device. Mark based on their problem-solving, creativity, and effectiveness of the improvement.

#### • Data Collection, Analysis & Graphing (20 marks)

- Students measure time, distance, speed, or performance, record data, and create graphs to interpret results.
- Students collect measurements (e.g., time, speed, weight supported), tabulate data, and draw conclusions or graphs.

### Include:

- Measurement criteria (e.g., how to measure distance, how weight is applied)
- Performance criteria (e.g., success = travel 1m, support 2kg)
- Graphing requirements (e.g., draw a bar graph of 3 test results)
- Modification prompts (e.g., "Based on your test, describe one change you would make and why.")



## Section D – Cleanup and Sustainable Practices (5 marks) Purpose:

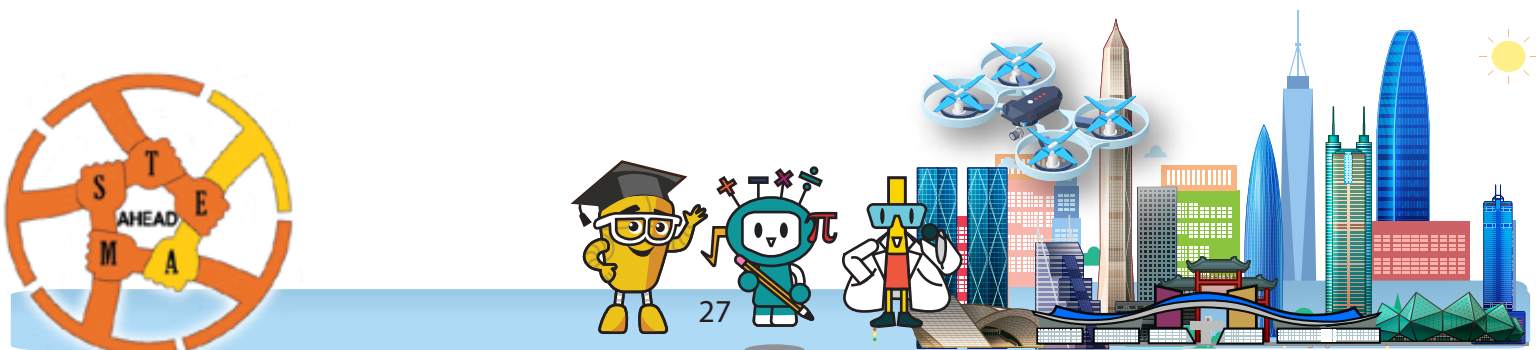
### Purpose:

To instil a sense of environmental responsibility and discipline during hands-on tasks.

- Students are expected to clean up responsibly and manage waste, reflecting environmental consciousness.

### Award marks for:

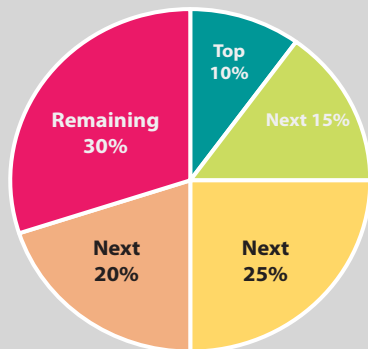
- Tidiness and organization
- Recycling or neatly storing unused materials
- Minimal waste left at the table
- Proper tool and workspace management



# Awards

## VIJSO individual Awards

### Awards for SIMCC Global Competitions



-  **Gold Award**
-  **Silver Award**
-  **Bronze Award**
-  **Honorable Mention Certificate**
-  **Participation Certificate**

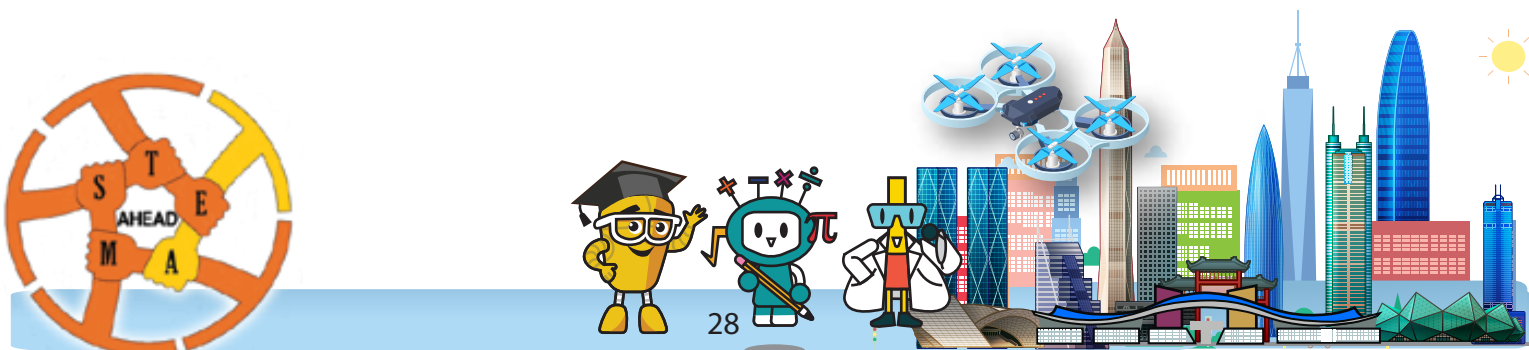
Students achieving a full score will receive both a Perfect Score Certificate and a Perfect Score Medal.

Students who achieve a perfect score will receive a gift voucher of up to SGD 100, which will be adjusted proportionally if the total allocation of SGD 1000 is exceeded.



#### STEAM AHEAD voucher terms and conditions:

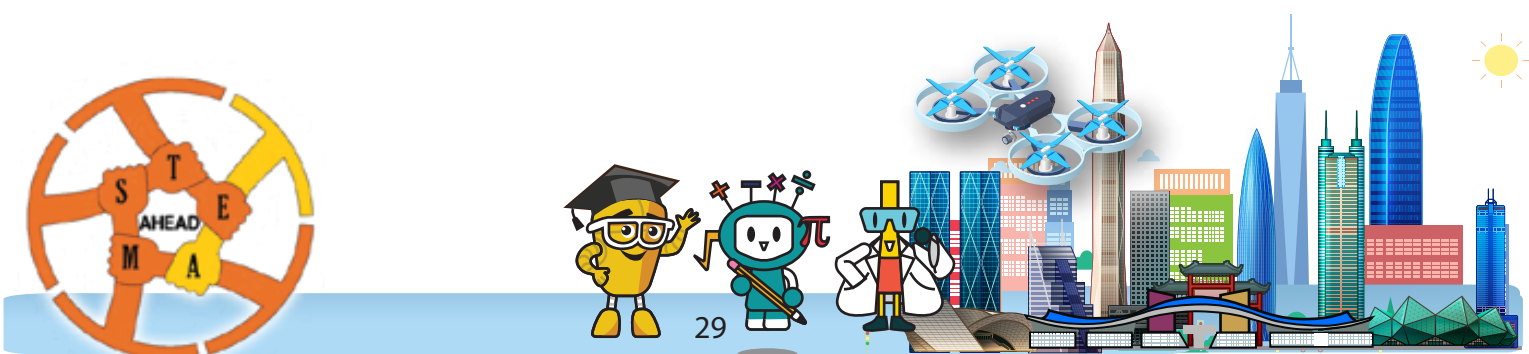
1. This voucher expires 12 months from the month of issue.
2. This voucher can be used to participate on any of SIMCC competitions, trainings or tour packages and its value is equivalent to the Singapore currency as printed.
3. This voucher cannot be used in conjunction with other voucher.
4. This voucher is not refundable and cannot be replaced if lost, damage or expired.
5. This voucher is not exchangeable for cash and any unused balance will not be refundable.
6. This voucher is not legal tender and cannot be deposited into any bank account.
7. SIMCC reserves the right to vary amend the privileges or terms & conditions without prior notice.





# Certificate and Medal

Individual winner will be awarded with Certificate and Medal.

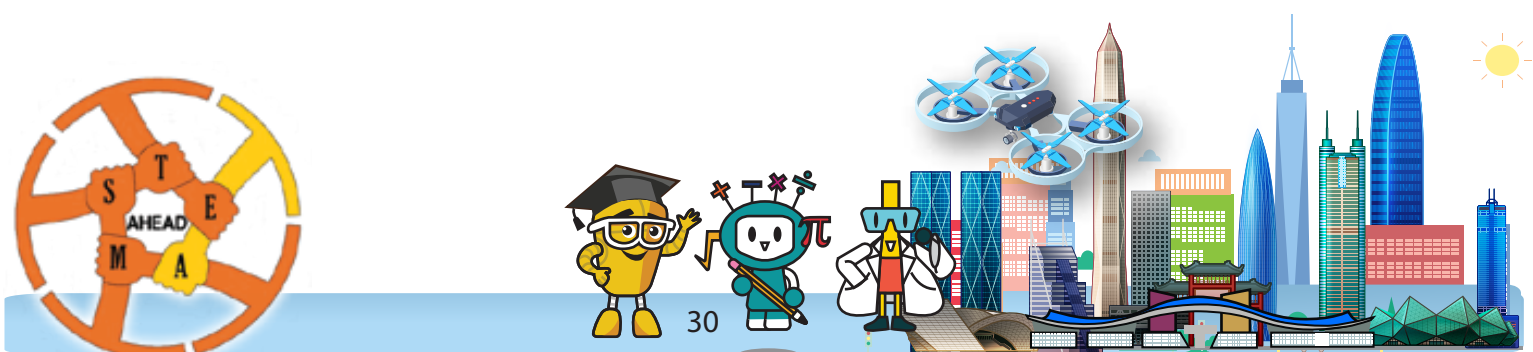


# Certificate and Medal

## Team Awards - Round 2 (Team Challenge)

| Award        |          |
|--------------|----------|
| Gold award   | Top 10%  |
| Silver award | Next 15% |
| Bronze award | Next 25% |

Winning Team will be awarded with Certificate and Medal.



# Awards

## VIJSO Overall Championship Awards

### Computation Rules

#### 1. Eligibility Requirement

A student must win a Gold Medal in the Individual Round to be considered for the Overall Championship.

#### 2. Team Round Award Points

Gold Award in Team Round = 15 points

Silver Award in Team Round = 10 points

Bronze Award in Team Round = 5 points

#### 3. Overall Points Formula

Overall Points = Individual Round Score + Team Round Award Points

#### 4. Determining the Winners

Overall Champion - Student with the highest overall points

Overall 1st Runner-up - Student with the second highest overall points

Overall 2nd Runner-up - Student with the third highest overall points

#### Awards (STEAM AHEAD GIFT VOUCHER)

##### Overall Champion

- Trophy
- Certificate
- IJHS induction
- YALA Gold Scholarship 2026
- SGD250 Gift Voucher

##### Overall Runner-up

- Trophy
- Certificate
- IJHS induction
- SGD150 Gift Voucher

##### Overall 2nd Runner-up

- Trophy
- Certificate
- SGD100 Gift Voucher

Please kindly note that Overall Championship will only be awarded for division or grade that has more than 50 participants.



Overall Championship Trophy

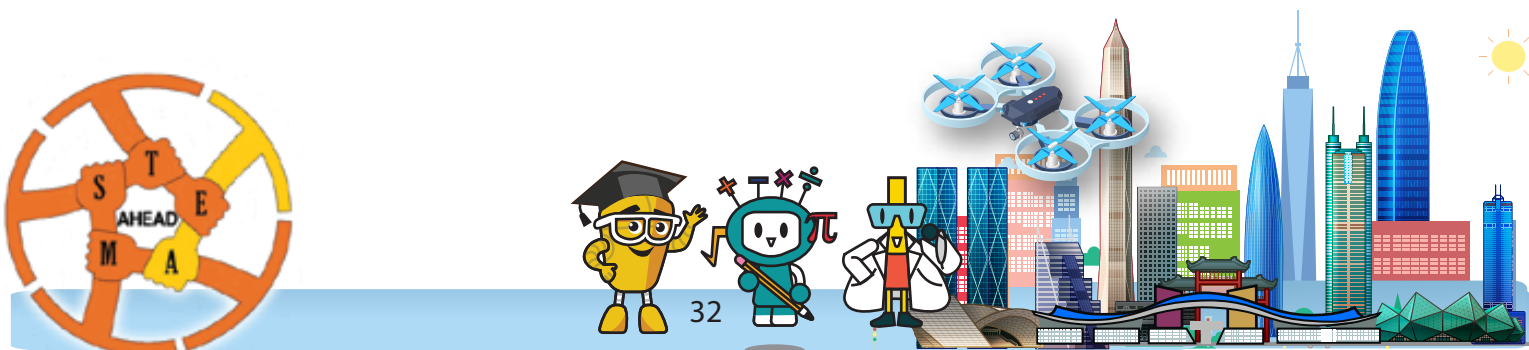




# Awards

## VIJSO Overall Championship Awards STEAM AHEAD Gift Voucher Terms and Conditions:

1. This voucher expires 12 months from the month of issue.
2. This voucher can be used to participate in any of SIMCC competitions and training or purchase books, games or tour packages and its value is equivalent to the Singapore currency as printed.
3. This voucher cannot be used in conjunction with any other voucher.
4. This voucher is not refundable and cannot be replaced if lost, damage or expired.
5. This voucher is not exchangeable for cash and any unused balance will not be refundable.
6. This voucher is not legal tender and cannot be deposited into any bank account.
7. SIMCC reserves the right to vary amend the privileges or any terms & conditions without prior notice.





# Rules for VIJSO

## Overall Championship Tiebreaker:

**Tie Situation:** In the event of a tie for the VIJSO Overall Championship, a tiebreaker round will be conducted.

**Tiebreaker Schedule:** The tiebreaker will be held on December 15th.

**Location:** Will be announced later

**Notification:** All tied contestants will be informed of the tiebreaker on December 15th. Notifications will be delivered via the Country Council Partner.

**Tiebreaker Format:** During the tiebreaker round, each tied contestant will receive a similar question. The first contestant to correctly answer the question will be crowned the winner.

**No-show Consequence:** Contestants who fail to attend the tiebreaker will automatically forfeit their chance for the higher award. Attendance is crucial for eligibility.

**Decision Finality:** The decision made based on the results and timing of the tiebreaker will be final. No further appeals or challenges regarding the outcome will be entertained.

Contestants are encouraged to familiarize themselves with these rules and ensure their availability for the tiebreaker round. Best of luck to all participants.

# Rules



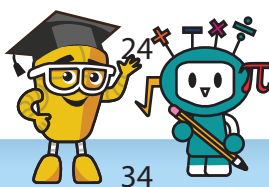


## About IJIO

The International Junior Informatics Olympiad (IJIO) is a prestigious global competition designed to inspire and challenge young students in the exciting fields of computer science, computational thinking, and problem-solving. Bringing together bright minds from around the world, IJIO provides an opportunity for junior participants to showcase their talents, creativity, and logical reasoning through engaging informatics challenges.

Unlike traditional exams, IJIO emphasizes both algorithmic thinking and practical application, encouraging students to explore how computing concepts can be applied to solve real-world problems. The competition fosters innovation, teamwork, and perseverance, empowering students to develop skills that will prepare them for the digital future.

With participants representing diverse cultures and educational systems, IJIO is not just a competition—it is also a global platform for collaboration and learning, where young talents can exchange ideas, broaden their horizons, and build lasting friendships.



# Objectives

- **Foster Creativity and Resourcefulness:** Encourage students to exercise their creativity and resourcefulness by brainstorming innovative ideas for using readily available household materials to accommodate the size and weight of the micro:bit in various inventive ways.
- **Promote Iterative Design:** Challenge students to test and iterate their designs using different materials and sizes, aiming to create an optimal solution for the micro:bit. This iterative process fosters problem-solving skills and a deep understanding of design principles.
- **Develop Technical Skills:** Equip students with the practical knowledge of how to download programs and transfer them to the micro:bit, allowing them to execute and interact with their own coded projects on the micro:bit platform.
- **Cultivate Design Thinking:** Introduce students to the design thinking process, which involves empathizing with user needs and defining problem statements. Through this approach, students will develop a deeper understanding of real-world challenges and user requirements.
- **Apply Creative Problem Solving:** Encourage students to apply their newfound understanding and creative thinking skills. This hands-on application of knowledge allows them to solve a problem or meet a user need in a creative and engaging manner, applying design thinking principles.

Overall, the objective of the INTERNATIONAL JUNIOR INFORMATICS OLYMPIAD is to provide students with a multifaceted learning experience that encompasses creativity, technical skills, design thinking, and practical problem-solving, all while using Micro:bit MakeCode as a stimulating and educational platform.

## Prerequisites for the Competition

- Bronze and above winners for NJIO 2025 and NJCO 2025 from each country are invited to represent their country.
- Bronze and above winners for IJP0 2025 from China are invited to represent their country.
- Silver and above winners for BEBRAS 2025 from Singapore and Cambodia are invited to represent their countries.
- We also invite all IJMO 2025 participants to participate in the prestigious IJIO, where they can proudly represent their countries.



# Syllabus for IJIO

## Lower Primary Division

- Define algorithms and create simple step-by-step instructions.
- Understand the concept of variables and apply them in various scenarios.
- Use conditional statements to make decisions based on given conditions.
- Apply computational thinking skills to solve problems in everyday life.

## Upper Primary Division

- Understand the concept of Iteration and apply it to various scenarios.
- Navigate the Coordinate Grid System to locate and describe positions.
- Use Booleans to make decisions and apply conditional statements.
- Apply computational thinking skills to solve problems involving Iteration, Coordinates, and Booleans.

## Secondary Division

- Understand the concepts of Bits, Bytes, Binary, Radio, and Arrays.
- Explain how digital information is represented using Binary.
- Describe the principles of wireless communication and radio technology.
- Apply computational thinking skills to solve problems involving data representation, wireless communication, and data structures (Arrays).

## SOFTWARE & HARDWARE REQUIREMENTS:

### 1. Hardware :

A laptop which can surf internet via Wi-Fi and with USB port

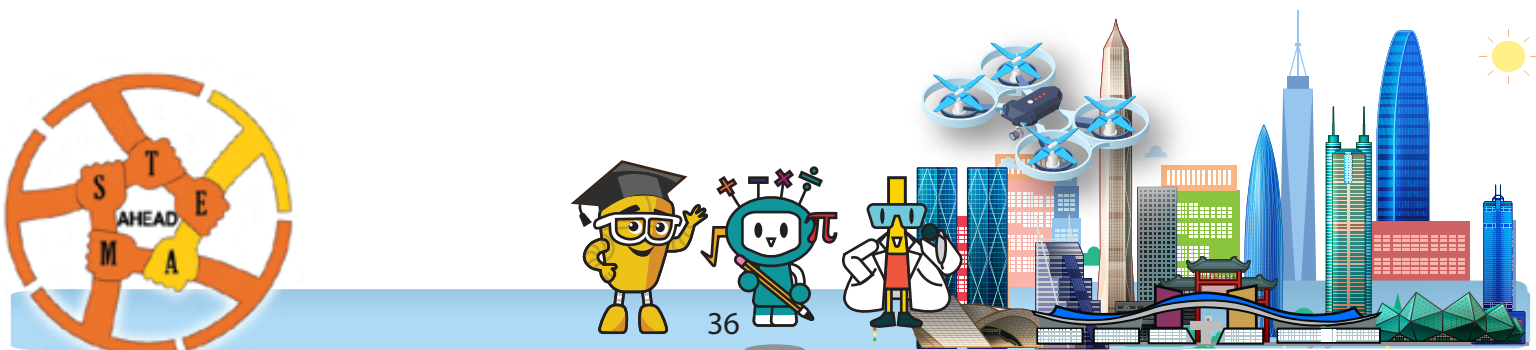
### 2. Software :

#### 2.1 Laptop OS :

- Windows: Windows 7+ or higher
- Mac or Chromebook

#### 2.2 Browser: Chrome or Edge

The instructions will prompt you to pair your micro:bit to your browser and then transfer the code directly to your micro:bit using webUSB





# Format

## Round 1: Individual Challenge

### Objective:

- To assess and improve individual coding skills.
- To evaluate problem-solving abilities.
- To encourage independent thinking and creativity.
- To assess participants' ability to apply programming knowledge in real-world scenarios.

### Learning Outcome:

- Participants gain proficiency in coding and problem-solving skills, which are essential in real-world applications of technology.

### Evaluation by Judges:

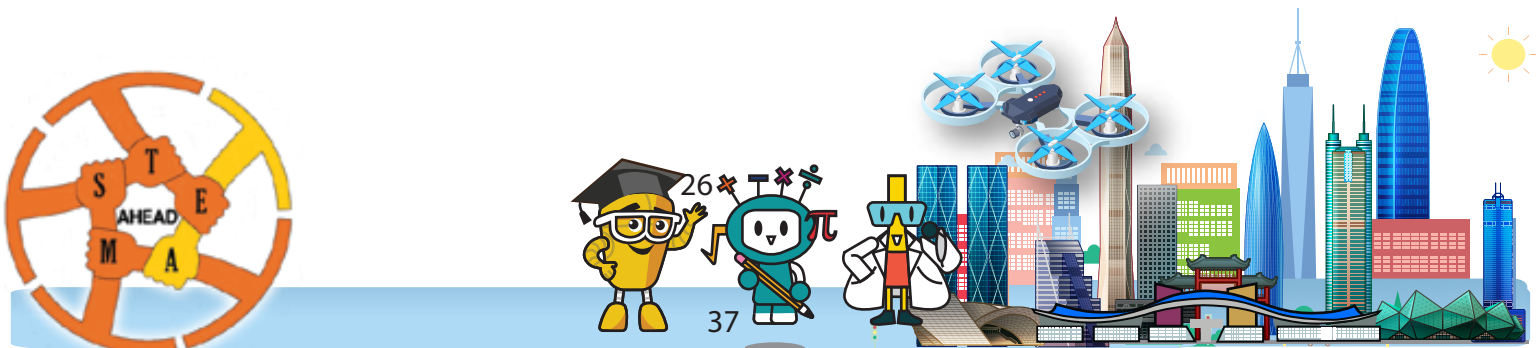
- Programs are assessed based on correctness, efficiency, and adherence to the provided requirements.

**Competition Date: 13th Dec 2025 Time: 11am to 3pm**

**Duration: 1 hr**

Section I: Design a Flow chart/Program flow diagram as a solution for the problem statement. (50 Marks)

Section II: Use Microsoft MakeCode for BBC Micro:bit and create a program/code for the given tasks. (50 Marks)



# IJO Individual Challenge

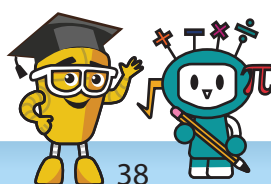
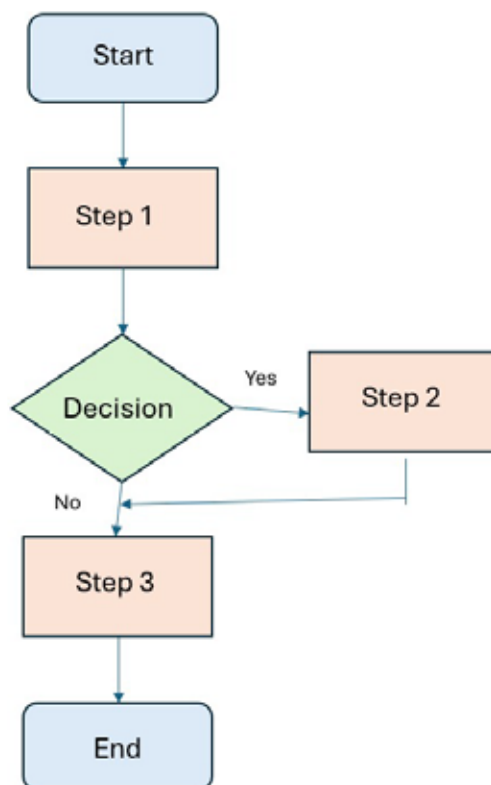
## Contest Structure

### Section I

The student will draw the flowchart diagram on the contest booklet and make sure to review the work before submission to ensure that all components are included.

#### Instructions for Creating the Flowchart:

- **Clear Labels:** Use clear and concise labels for each step in the flowchart.
- **Flow Indicators:** Use arrows to indicate the flow of control between steps.
- **Shapes for Actions:** Use different shapes (e.g., rectangles for processes, diamonds for decisions, ovals for start/end) to represent different types of actions or decisions.
- **Descriptions:** Include clear descriptions in the diagram to explain specific parts of the flowchart.
- **Testing:** Test the flowchart by tracing through it with different input values to ensure it produces the correct output.
- **Hand Drawing Materials:** You will be provided with pencil and an eraser to draw the flowchart diagram by hand on the contest booklet. All students will receive the same stationary for drawing.
- **Neatness and Readability:** Marks will be awarded not only for the correctness of the flowchart diagram but also for neatness, including clear and legible symbols and overall readability.



# IJO Individual Challenge Contest Structure

## Section II

- Choose a location (like your Desktop or a specific folder) and click Save. The downloaded file will have a .hex extension, which is the format needed for the
- Save your filename as[indexnumber].hex  
Example 065000123456.hex
- Save your filename as[indexnumber].zip  
Example 065000123456.zip  
if you do not have zip in your laptop, please download from the below link:  
<https://7-zin.ora/download.html>

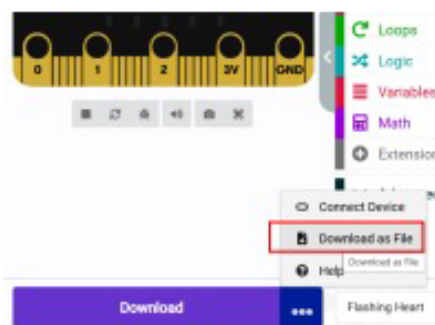
### Submit your Program File to Member Development Portal (MDP)

- Upload your program file.

#### How to download and submit:

##### 1. Download the Program

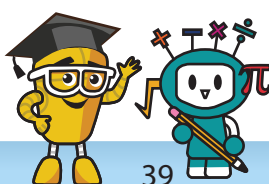
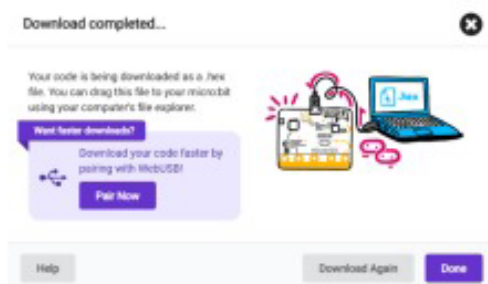
- Once you are satisfied with your program, look for the **Download** button. This button is in the bottom left corner of the editor window.



- Click on the **Download as File** button. This action will package your program into a file that is ready for your Micro:bit

##### 2. Save Your File

- A dialog box will appear prompting you to choose a location on your computer to save the file.





# IJIO Team Challenge

## Overview

The Team Round of the International Junior Informatics Olympiad (IJIO) is an engaging and collaborative segment of the competition that goes beyond individual problem-solving. It is designed to test participants' ability to apply programming knowledge in real-world scenarios while working effectively in a team setting.

In this round, students collaborate to solve a series of challenging tasks that require algorithmic thinking, logical reasoning, and practical coding skills. The format emphasizes not only technical knowledge but also teamwork, communication, and strategy, as participants must coordinate their efforts and leverage each other's strengths to achieve the best results.

Through the Team Round, participants enhance their problem-solving and coding skills while gaining valuable experience in applying computational concepts to practical challenges. It is both a test of technical ability and a celebration of collaboration, preparing students for future academic and professional pursuits in the digital world.





# IJO Team Challenge

## Format

In the previous round, each team member designed individual programs to meet the given objectives. In this round, work as a team to select the best program created by your members. Using the provided materials, build a practical model based on the chosen program and present the final model to the judges.

Divisions by Grade

Grade 1 to Grade 3 – Lower Primary Division

Grade 4 to Grade 6 – Upper Primary Division

Grade 7 to Grade 12 - Secondary & High School Division

**Competition Date: 13th Dec 2025 Time: 3pm to 630pm**

**Duration 3 hours**

**Section I: Select the best Program (5 marks)**

**Section II: Design the Project (20 marks)**

**Section III: Develop the Program Based on Your Design (30 marks)**

**Section IV: Build and test the model (33 marks)**

**Section V: Presentation of Your Project (12 marks)**

The total score for this round is 100 marks



# IJIO Team Challenge

## Contest Structure

### Safety Instructions for Handling Electronic Components and Tools:

**Handling Of Electronics:** Always handle electronic components, such as the Micro:bit, sensors, and batteries, with care. Ensure your hands are dry to avoid any short Circuits.

**Wiring and connections:** When connecting wires, be sure to connect them correctly. Incorrect connections can damage the components.

**Battery safety:** Be careful when handling batteries. Do not short the battery terminals and ensure they are inserted in the correct orientation.

**Use Of Tools:** If you are using any tools like scissors or glue, use them responsibly, scissors should be handled with care, and glue should be used in a well-ventilated area.

**General Safety:** Keep your workspace organized to avoid accidents. If any component or tool is malfunctioning, stop using it immediately and inform an invigilator.

### Teamwork, Effective Communication, and Time Management:

**Teamwork:** collaborate and share responsibilities equally among team members. Recognize each other's strengths and delegate tasks accordingly.

**Communication:** Maintain clear and respectful communication within your team. Listen to each other's ideas and build upon them. If disagreements arise, resolve them constructively.

**Time Management:** Be mindful Of the time constraints. Plan your activities and divide your time effectively between programming, building the model, and preparing for the presentation. Regularly check the time to stay on track.

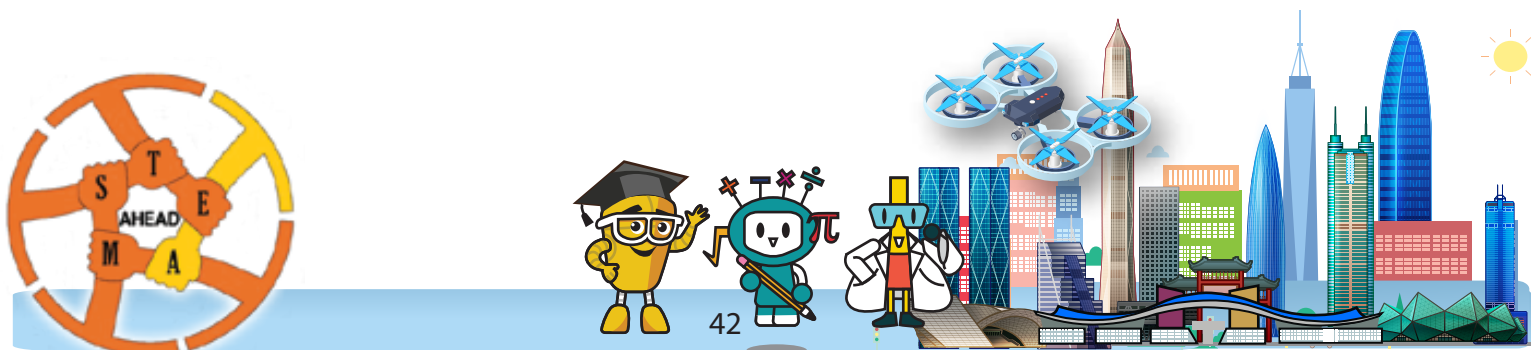
### Evaluation Criteria:

**Technical Implementation:** Focus on the accuracy and efficiency of your programming. Ensure that your program meets the specified objectives and integrates new features seamlessly.

**Design Accuracy:** your design and Circuit diagram should be precise and reflect a clear understanding Of how each component interacts. Accuracy in your design is crucial for a successful build.

**Presentation Skills:** prepare for a clear and engaging presentation. Each team member should understand and be able to explain different aspects of the project. Practice your presentation to ensure clarity and confidence.

**Overall Focus:** Remember that the evaluation covers all aspects of the project — from the Technical implementation and design accuracy to teamwork and presentation Skills. Pay attention to each of these areas to excel in the competition.



# IJIO Team Challenge

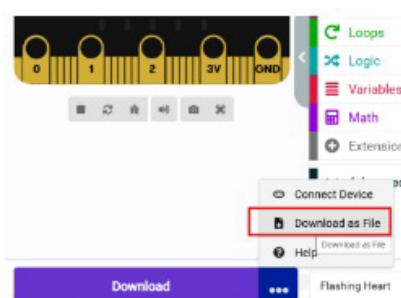
## Contest Structure

Make sure your final program accurately reflects the design you created in Section II and fulfills all project requirements.

### How to test your program on Micro:bit:

#### 1. Download the Program

Once you are satisfied with your program, look for the **Download** button. This button is in the bottom left corner of the editor window.



- Click on the **Download as File** button. This action will package your program into a file that is ready for your Micro:bit

#### 2. Save Your File

- A dialog box will appear prompting you to choose a location on your computer to save the file.
- Choose a location (like your Desktop or a specific folder) and click **Save**. The downloaded file will have a .hex extension, which is the format needed for the Micro:bit
- Save your filename as [team number].hex  
*Example 2025IJOT1.hex*

#### 3. Transfer the Program to Your Micro:bit:

- Connect your Micro:bit to your computer using a USB cable. It should appear as a removable drive (like a USB flash drive).
- Open the folder where you saved the .hex file.
- Drag and drop the .hex file onto the Micro:bit drive. The Micro:bit will automatically start programming itself with the new code.

#### 4. Eject the Micro:bit:

- Once the file transfer is complete, safely eject the Micro:bit drive from your computer. This step is important to avoid any data corruption.

#### 5. Test Your Program on the Micro:bit:

- Disconnect the Micro:bit from the computer and power it up (if using batteries).
- Your program should run on the Micro:bit.
- Test the functionality to ensure everything works as intended.



# IJIO Team Challenge Contest Structure

## How to download and submit your program:

### 1. Download the Program

Once you are satisfied with your program, look for the **Download** button. This button is in the bottom left corner of the editor window.



- Click on the **Download as File** button. This action will package your program into a file that is ready for your Micro:bit

### 2. Save Your File

- A dialog box will appear prompting you to choose a location on your computer to save the file.
- Choose a location (like your Desktop or a specific folder) and click **Save**. The downloaded file will have a .hex extension, which is the format needed for the Micro:bit
- Save your filename as [team number].hex  
*Example 2025IJOT1.hex*
- Zip your file and name it as [team number].zip  
*Example 2025IJOT1.zip*

*if you do not have zip in your laptop, please download from the below link:*

<https://7-zip.org/download.html>





# IJIO Team Challenge Contest Structure

## How to submit your presentation slide:

### 1. Save Your File

- Choose a location (like your Desktop or a specific folder) and click **Save**.
- Save your filename as [team number].ppt  
*Example 2025IJIOT1.ppt*

### 2. Submit your presentation slide to Member Development Portal (MDP)

- Login to MDP (<https://form.simcc.org>)
- Navigate to IJIO presentation slide Submission webform:  
Registration -> Contest Registration Form -> 2025 IJIO Presentation slide Submission Round 2
- Upload your presentation slide file.

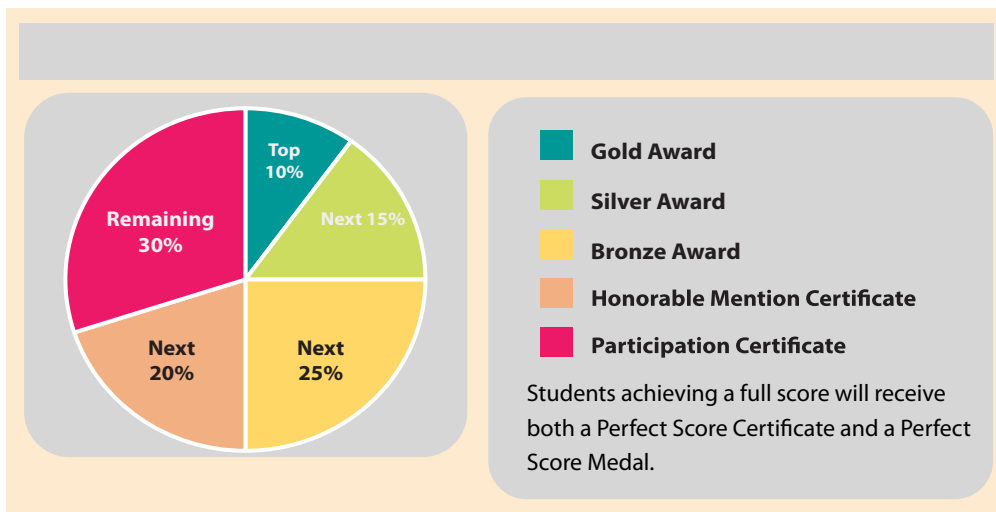
### 3. Submit your Program File to Member Development Portal (MDP)

- Login to MDP (<https://form.simcc.org>)
- Navigate to IJIO Submission webform:  
Registration -> Contest Registration Form -> 2025 IJIO Micro:bit program Submission Round 2
- Upload your program file.



# Awards

## IJO Individual award

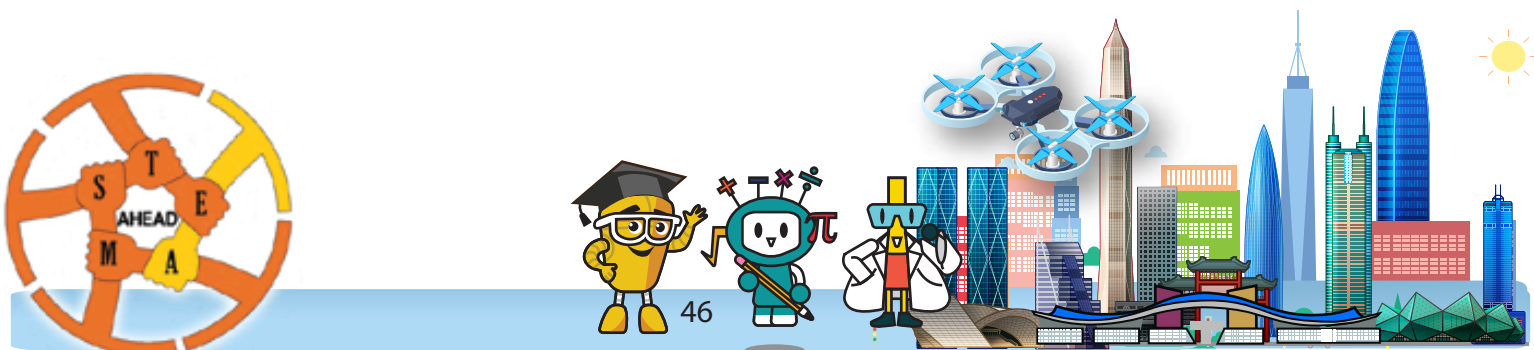


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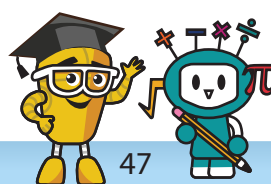
#### STEAM AHEAD voucher terms and conditions:

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# Certificate and Medal Individual Award

winner will be award with certificate and medal





# Certificate and Medal Team Award

## Team Awards - Round 2 (Team Challenge)

| Award        |          |
|--------------|----------|
| Gold award   | Top 10%  |
| Silver award | Next 15% |
| Bronze award | Next 25% |

Winning Team will be awarded with Certificate and Medal.





# Awards

## IJO Overall Championship Awards Computation Rules

### 1. Eligibility Requirement

A student must win a Gold Medal in the Individual Round to be considered for the Overall Championship.

### 2. Team Round Award Points

Gold Award in Team Round = 15 points

Silver Award in Team Round = 10 points

Bronze Award in Team Round = 5 points

### 3. Overall Points Formula

Overall Points = Individual Round Score + Team Round Award Points

### 4. Determining the Winners

Overall Champion - Student with the highest overall points

Overall 1st Runner-up - Student with the second highest overall points

Overall 2nd Runner-up - Student with the third highest overall points

#### Awards (STREAM AHEAD GIFT VOUCHER)

##### Overall Champion

- Trophy
- Certificate
- IJHS induction
- YALA Gold Scholarship 2026
- SGD250 Gift Voucher

##### Overall Runner-up

- Trophy
- Certificate
- IJHS induction
- SGD150 Gift Voucher

##### Overall 2nd Runner-up

- Trophy
- Certificate
- SGD100 Gift Voucher

Please kindly note that Overall Championship will only be awarded for division or grade that has more than 50 participants.



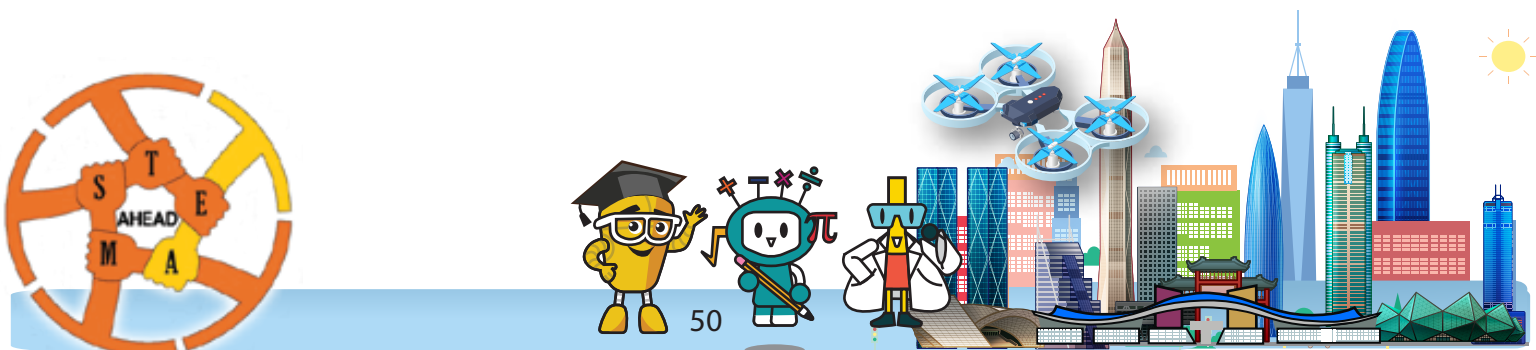
Overall Championship Trophy



# Awards

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# Rules for IJIO Overall Championship Tiebreaker:

## IJIO Overall Championship Tiebreaker Rules

**Tie Situation:** In the event of a tie for the IJIO Overall Championship, a tiebreaker round will be conducted.

**Tiebreaker Schedule:** The tiebreaker will be held on December 15th.

**Location:** Will be announced later

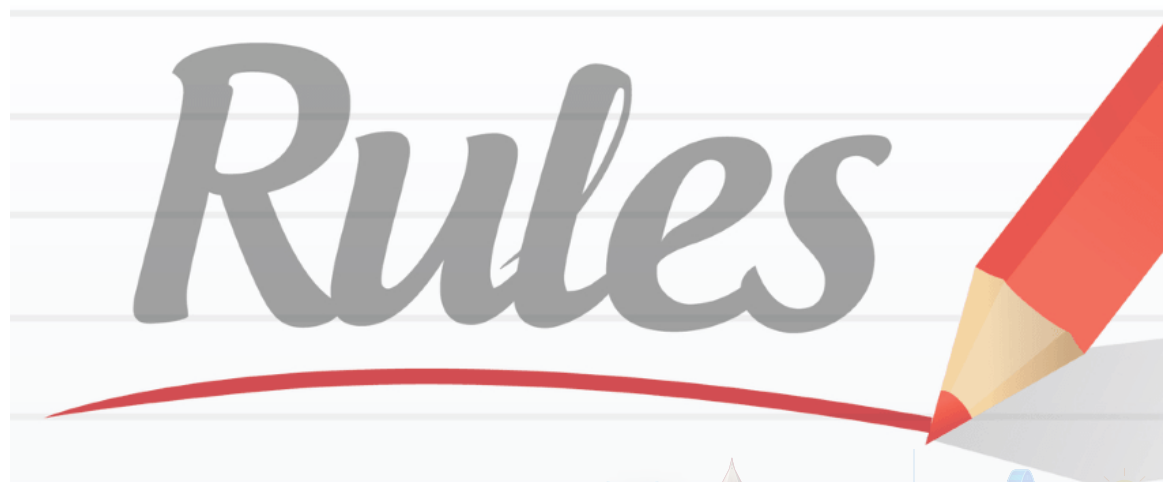
**Notification:** All tied contestants will be informed of the tiebreaker on December 15th. Notifications will be delivered via the Country Council Partner.

**Tiebreaker Format:** During the tiebreaker round, each tied contestant will receive a similar question. The first contestant to correctly answer the question will be crowned the winner.

**No-show Consequence:** Contestants who fail to attend the tiebreaker will automatically forfeit their chance for the higher award. Attendance is crucial for eligibility.

**Decision Finality:** The decision made based on the results and timing of the tiebreaker will be final. No further appeals or challenges regarding the outcome will be entertained.

Contestants are encouraged to familiarize themselves with these rules and ensure their availability for the tiebreaker round. Best of luck to all participants.







## IJCO CTF FORMAT

We are proud to announce that the National University of Singapore (NUS) Centre for Nurturing Computing Excellence (CeNCE) and the Singapore National Cybersecurity R&D Lab (NCL) have partnered with SIMCC and Scholastic Trust foundation Singapore to offer optional Capture the Flag (CTF) workshop as well as CTF Contest, which will be part of the STEAM AHEAD IJCOs for Grades 7 to 12 (Secondary 1 to Junior College 2) contestants.

Prof Tan Sun Teck, President of IOI and 2 key staffs from NCL will be in Shenzhen to organise the INTERNATIONAL JUNIOR CYBERSECURITY OLYMPIAD - Capture the Flag. Training will be conducted by NUS staff and the INTERNATIONAL JUNIOR CYBERSECURITY OLYMPIAD CTF certs will bear NUS CeNCE and NCL crests.

**Capture-the-Flag (CTF)** is a gamified approach to learning cybersecurity through a fun and captivating training + competition package. Participants' cybersecurity knowledge and teamwork skills are tested by reinforcing important concepts through challenges written as interactive games and puzzles. CTFs can be used to determine the skill level of participants.

Prior to the competition, trainings and workshops would be conducted to help participants gauge their preparation levels and brush up on the necessary skills to ace the competition challenges. This may be between 4 days to a week, depending on the program structure.



### How To Participate

- Students will be grouped into teams (usually of 3 members) and assigned virtual machines which have been pre-implanted with vulnerabilities and data they would have to discover.
- Teamwork and partnership is strongly encouraged.
- Submission of the data found (also known as "flags") will be on a challenge site that will be shared with participants.
- Communication with students (especially in the case of international students) will be through a specified chat channel. The chat channel will be monitored by admins 24 hours over the entire CTF duration.







### Competition Ground Rules

- Students are encouraged to maintain academic integrity. Anyone found sharing answers with other teams would be penalized or disqualified.
- Brute-forcing and attacking website, virtual machines or any other sites that are affiliated with the competition are strictly prohibited, unless stated otherwise.
- Any instances of threatening or harassing behavior will result in immediate dismissal and permanent banning from the CTF.
- Privacy of other competitors must be respected, and participants must not attempt to obtain personal information about them.
- All participants must play fairly and avoid any kind of cheating or dishonest behavior.
- Bugs should be reported to the support channel.

\*There may be many other ground rules that are relevant to the CTF competition that organizers may include at their own discretion.

**Competition Date: 15th Dec 2025 Time: To be confirmed**

**Duration: 4 Hrs**

## Prerequisites for the Competition

**Bronze and above winners at NJCO 2025 qualify to represent their country.**



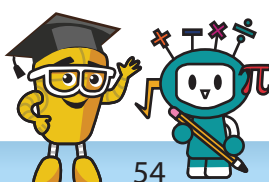
### Some Examples

A wide range of cybersecurity concepts will be taught to students through:

- MCQs in the form of riddles and puzzles
- Scenario-based questions on cyber-incidences
- Meaningful storylines and quests to captivate learners
- Higher point weightage that is assigned to more complex scenarios

### What's In A CTF Challenge?

- CTF challenges may consist of a diverse range of topics ranging from forensics to cryptography.
  - The difficulty level of challenges may be tailored according to the engaged audiences.
- A single challenge is deliberately crafted in a cryptic way which may encompass different cybersecurity topics and encourages critical thinking.
- Students may find that they have proclivity towards a certain discipline and are encouraged to build upon their innate skills and talents



# Syllabus



Training sessions can be tailored to the syllabus created for the target student groups. Here is an example of the topics likely to be covered in a series of trainings:

## Cybersecurity Overview

- Overview of Cybersecurity
- Cybersecurity in Our Daily Lives
- Case Studies of Real-Life Cyber-Incidents
- Scenarios

## Cybersecurity Tools

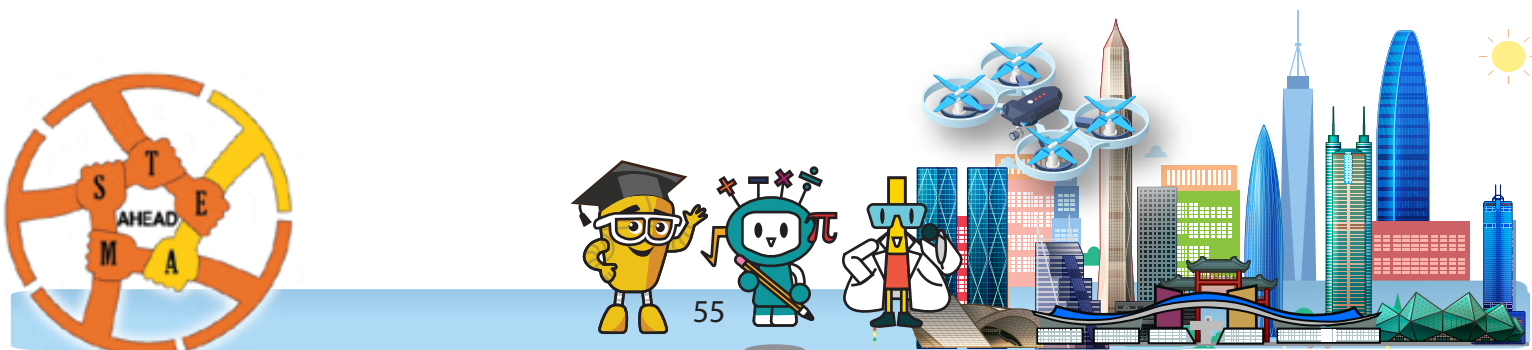
- Introduction to Popular Cybersecurity Tools (e.g., Wireshark, Nmap)
- Cybersecurity Common Criteria
- Safeguarding Cybersecurity in Organizations

## Network Protocols

- Introduction to Network Protocols
- Cipher Types & Passwords
- Basic Offensive & Defensive Security
- Introduction to Software Engineering (focusing on secure coding practices)

## Introduction to CTF

- Common Cybersecurity Terminologies
- Linux Fundamentals
- CTF Overview
- Practicing Misc. CTF Challenges
- CTF Competition Briefing



# Prerequisites & Requirements



## International Cybersecurity Junior Olympiad (IJCO)

December 2025

### Participant Prerequisites and Technical Requirements:

#### Prerequisite / Knowledge Requirements:

To effectively participate in the IJCO Onsite Contest, students are strongly encouraged to attend the training sessions and possess foundational knowledge in Python and C programming.

#### ☒ Python Programming

- Basic Concepts: Variables, Data Types, Conditional Statements, Loops, File I/O, Object-Oriented Programming (OOP), Exception Handling
- Networking Libraries: requests, socket, scrapy, paramiko, socket.io, httpx, pycurl
- Cryptography Libraries: ssl, cryptography, pycrypto, pycryptodome, hashlib, pynacl
- Penetration Testing Libraries: impacket, python-nmap, pwntools, BeautifulSoup

#### ☒ C Programming

- Basic Concepts: Syntax, Data Types, Memory Management, Control Structures, Functions, Pointers & Arrays
- Advanced Topics: File I/O, Bitwise Operations, Buffer Overflows, Structs & Typedefs, Assembly & System Calls
- (Optional): Debugging Tools and Techniques

Students are encouraged to explore beyond NCL's official materials and use any additional learning resources they find useful.

The contest topics are based on the above but are not limited to them. A strong foundation in general cybersecurity concepts will be beneficial.

Participants can also try platforms such as [TryHackMe](#), [picoCTF](#), and [Hack the Box](#) to learn and practice in real Capture The Flag (CTF) environments.

The IJCO contest itself will be hosted on the CTFd platform: <https://ctfd.io/>

#### Client Device Requirements:

Each participant must have access to a personal device capable of accessing the internet. The device must meet the following specifications:

#### Supported Operating Systems:

- Windows: Version 10 or higher





- Mac: macOS 12 (Monterey) or higher
- Linux: Ubuntu 20+, Debian 10+

#### **Browser Requirements:**

- Google Chrome
- Mozilla Firefox (version 80 or higher)
- Opera
- Microsoft Edge (version 17 or higher)

#### **SSH Client (Optional):**

Some challenges may require SSH access to remote cloud instances. Participants can use the built-in ssh command or install a dedicated SSH client:

- PuTTY: <https://www.putty.org/>
- MobaXterm: <https://mobaxterm.mobatek.net/download.html>

#### **Recommended Tools, Packages & Software:**

Participants should install the following prior to the contest to ensure they are fully equipped for the challenges:

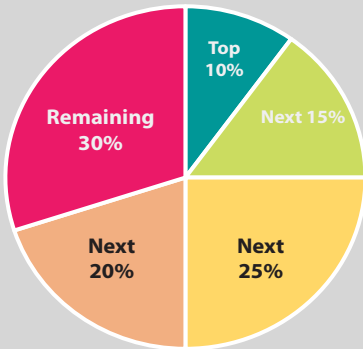
| Tool                              | Purpose                          | Download Link                                                                                                             |
|-----------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Volatility 3.0                    | Memory forensic analysis         | <a href="https://github.com/volatilityfoundation/volatility3">https://github.com/volatilityfoundation/volatility3</a>     |
| Python                            | Programming & scripting          | <a href="https://www.python.org/downloads/">https://www.python.org/downloads/</a>                                         |
| GCC                               | C programming                    | <a href="https://gcc.gnu.org/install/">https://gcc.gnu.org/install/</a>                                                   |
| Windows Subsystem for Linux (WSL) | Run Linux tools on Windows       | <a href="https://learn.microsoft.com/en-us/windows/wsl/install">https://learn.microsoft.com/en-us/windows/wsl/install</a> |
| Wireshark                         | Packet analysis                  | <a href="https://www.wireshark.org/download.html">https://www.wireshark.org/download.html</a>                             |
| NMAP                              | Network scanning                 | <a href="https://nmap.org/">https://nmap.org/</a>                                                                         |
| Nikto                             | Web server vulnerability scanner | <a href="https://github.com/sullo/nikto">https://github.com/sullo/nikto</a>                                               |



# International Junior Cybersecurity Olympiad (IJCO) IJCO Individual award



## Awards for SIMCC Global Competitions



- Gold Award
- Silver Award
- Bronze Award
- Honorable Mention Certificate
- Participation Certificate

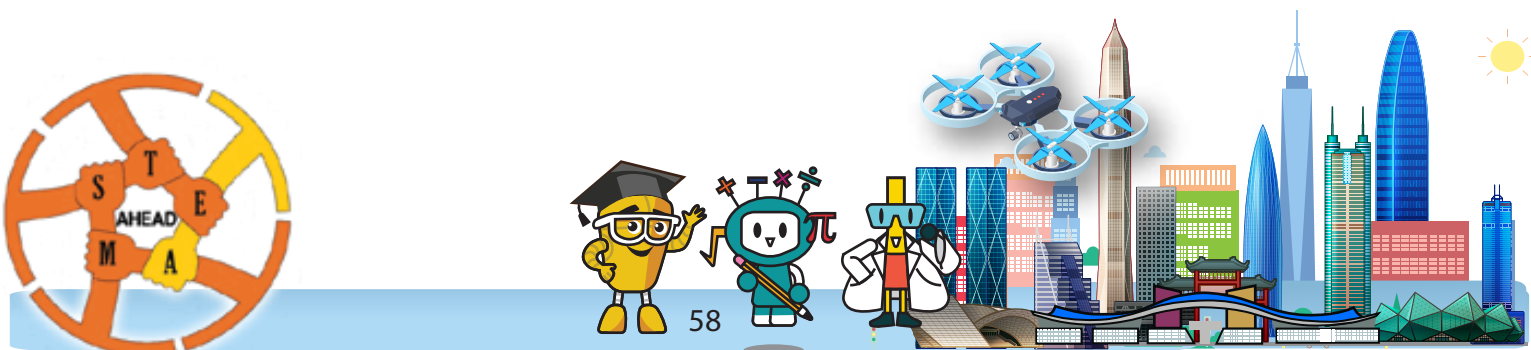
Students achieving a full score will receive both a Perfect Score Certificate and a Perfect Score Medal.

Students who achieve a perfect score will receive a gift voucher of up to SGD 100, which will be adjusted proportionally if the total allocation of SGD 1000 is exceeded.



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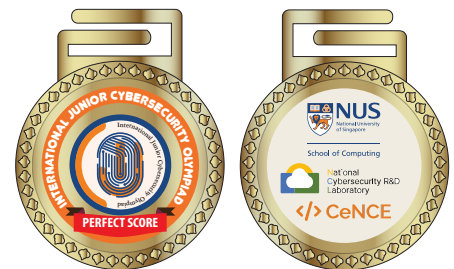


# Certificate and Medal

## IJCO Individual award



Winner will be award with certificate and medal





# Awards

## IJCO Team award



| Award        |          |
|--------------|----------|
| Gold award   | Top 8%   |
| Silver award | Next 12% |
| Bronze award | Next 20% |

Winning Team will be awarded with Certificate and Medal.





# Awards

## IJCO Overall Championship Awards

### Awards (STEAM AHEAD GIFT VOUCHER)

#### Overall Champion

- Trophy
- Certificate
- IJHS induction
- YALA Gold Scholarship 2026
- SGD250 Gift Voucher

#### Overall Runner-up

- Trophy
- Certificate
- IJHS induction
- SGD150 Gift Voucher

#### Overall 2nd Runner-up

- Trophy
- Certificate
- SGD100 Gift Voucher

Please kindly note that Overall Championship will only be awarded for division or grade that has more than 50 participants. We may give out Overall Championship trophies, but it will not include any scholarships or cash vouchers.



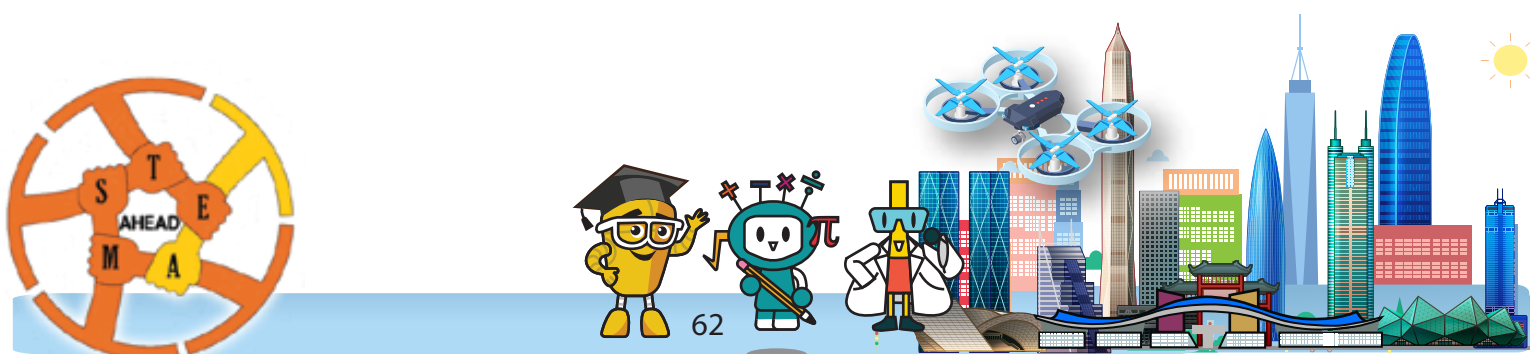
Overall Championship Trophy



# Awards

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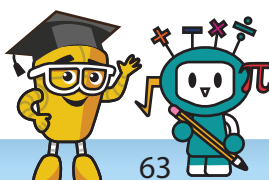
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Contestants are encouraged to familiarize themselves with these rules and ensure their availability for the tiebreaker round. Best of luck to all participants.





# About International Junior Arts Olympiad

The event is organized by the Singapore International Children's Media (SICM) under the auspices of the International Ministry of Youth Leadership (SINGAPORE), co-organised by the Federation of Arts Society Singapore (FASS) and the Youth Century International Arts Education Centre (YCAC), and international youth art competition that will bring together more than 100 international institutions and 200 leading artists from over 40 countries around the world. SIMCC and Scholastic Trust Singapore Foundation are Co-organizers to include IJA O into STEAM AHEAD Global Finals Academic Competitions.

Science, Technology, Engineering, Arts , and Mathematics (STEAM) education has been growing rapidly in the last decade. You've probably heard of the acronym STEM. STEM was introduced in 2001 as a way to refer to careers and/ or curriculum centered around Science, Technology, Engineering and Mathematics (STEM) -the most rapidly growing industries in the Global economy. Then as many companies continued to ramp up technological innovation, in order to remain competitive across the globe, the movement around integrating STEM into educational frameworks began to gain a lot of traction.

## Prerequisites for the Competition

\* Open to Bronze and above winners for SIAT 2025 from each country are invited to represent their country.





# Requirements

## COMPETITION ENTRY TOPIC

### Theme: "The Imaginary Space of Future Art"

All entries must be original, unpublished and must not infringe on any copyright or intellectual property rights of others.

Entries should demonstrate racial harmony, love, mutual development, world peace, highlight the culture and national characteristics of each country and demonstrate the positive spirit of the country's youth.

## COMPETITION CATEGORIES:

Submission of independently created artworks by student.

Children : Grade 1 to 4

Teenagers: Grade 5 to 8

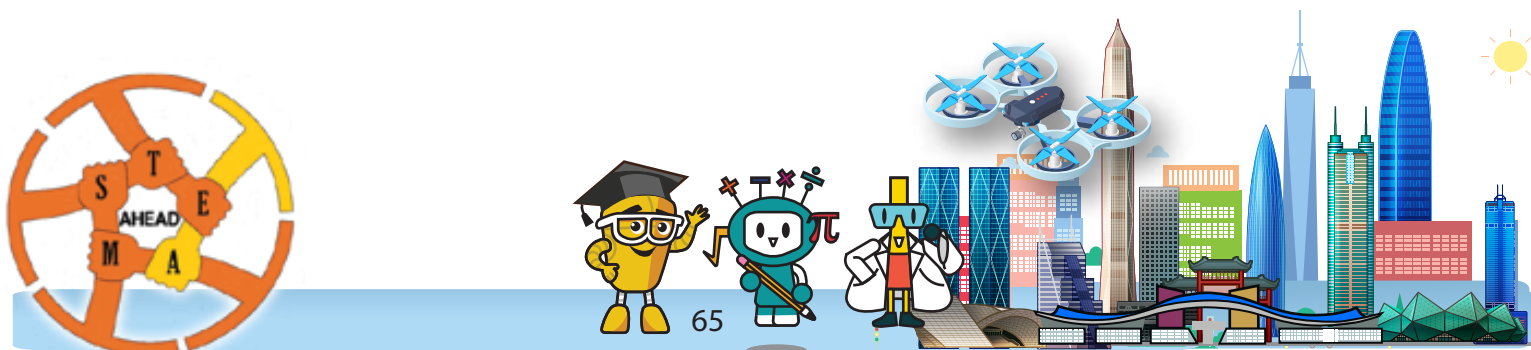
Youth : Grade 9 and 12

Each award-winning participant may enter one or more competition categories and up to three works per category.

## Requirements for Entry Submission

1. File Size & Format: Accepted dimensions: 40cm x 50cm
2. Accepted formats: JPG, JPEG, PNG. File size must not exceed 5MB. Minimum resolution: 300 DPI (at least 1024 x 768 pixels).
3. Video submissions: MP4 or MOV, max file size 500MB.
4. Application Materials: A short description of the artwork (maximum 200 words) in Chinese or English. A 3-minute video introduction about yourself and your creative process.

If selected, participants must submit the original artwork along with a valid mailing address. The organizing committee will provide further instructions.

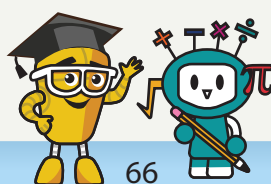
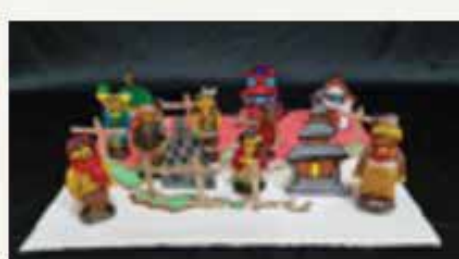


# Developing Talent for National Development with Key Partners Globally to Uplift Lives through Education by Doing Good and

## Ink and Watercolor Group



## Creative Group



## Calligraphy Group

春眠不覺曉  
處聞啼鳥  
夜來風雨聲  
花落知多少

唐孟浩然詩 春晚  
發春冬 今款書

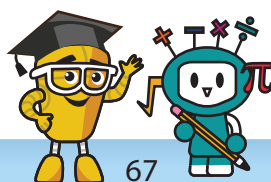
遠上寒山石徑斜  
白雲生處有人家  
停車坐愛楓林晚  
霜葉紅於二月花

杜牧詩 孟浩然詩 春晚  
發春冬 今款書

渡遠荆門外來從楚  
國游山隨平野盡江  
入大荒流月下飛天  
鏡雲生結海樓仍憐  
故鄉水萬裏送行舟

李太白詩 孟浩然詩 春晚  
發春冬 今款書

## Sketch Group

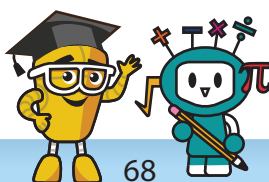




## 5. Creative



## 6. Comics

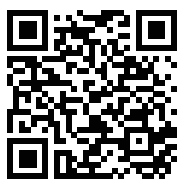




# Registration

25th September to 20th October – Country Partners will submit the IJAO Registration via the service request.

21st October to 31st October – Students that participate in IJAO will submit the artwork via MDP. The webform is password protected, and the students will receive the password from the country partner.



REGISTRATION WEBSITE  
Visit: <https://form.simcc.org/registration-form-contests/>

Results announcement: 1st November to 15th November

16th November to 24th November  
– Invitation to participate in Asia Pacific Art Exhibition

If students are attending the Asia Pacific Art Exhibition and participating in STEAM AHEAD 2025, they must bring their artwork to Shennzhen. However, if a student is not attending STEAM AHEAD 2025 but still wishes to participate in the Asia Pacific Art Exhibition, they can hand over their artwork to their country partner, who will bring it on their behalf.

12th December to 17th December

- Artworks should not be framed.
- All the artworks will be returned during SIMOC 2026

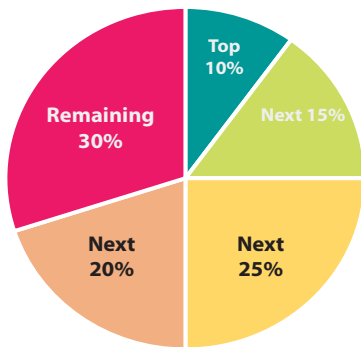


# Award

## IJAO Individual award



Winner will be award with certificate and medal



- Gold Award
- Silver Award
- Bronze Award
- Honorable Mention Certificate
- Participation Certificate



## PROUDLY PRESENTS

STEAM AHEAD GLOBAL FINALS

DATE

12TH DECEMBER TO  
17TH DECEMBER 2025



# STEAM AHEAD 2025

## Day 1 Arrival

Students, parents and teachers arrive from different countries  
Check in to hotel (Free and Easy)

### NOTES

Collect the contest pass, goodies bag and t-shirt

## Competitions Day 3

9am to 930am – VIJSO registration  
930am to 11am – VIJSO Individual competition  
11am to 12pm – Photo taking (For all VIJSO students)  
12pm to 1pm – Lunch for all students taking VIJSO  
1pm to 130pm – Prepare for VIJSO Team Session  
130pm to 5pm – VIJSO Team session  
5pm to 530pm – Departure

## Day 2 Competitions

9am to 930am – IJMO registration  
930am to 11am – IJMO competition  
11am to 1130am – Arrival IJIO students  
1130am to 1200pm – Photo taking (For IJMO Students only)  
1230pm to 115pm – Lunch for all students  
115pm to 130pm - Photo taking IJIO  
130pm to 2pm – IJMO only student departure  
130pm to 2pm – Prepare for IJIO Individual & Team Session  
2pm to 6pm – IJIO individual & team session  
6pm to 630pm - Departure

## Day 4 Tour / IJCO Competition

IJCO Competition  
Optional Country Tour

## Tour / Result Day 5

Result announcement /  
Optional Country Tour

## Day 6 Gala Lunch & Departure

### Steam Ahead 2025 Award Ceremony and Gala Lunch

9am to 4pm - STEAM AHEAD 2025 Award Ceremony

All the students need to wear their country ethnic costumes

### Departure

Must check-out and return all the hotel room keys

\* SIMCC reserves the right to make changes to the above itinerary.

## DATE: 12th to 17th December 2025

Hotel: 5 & 4 stars hotel including 4 free breakfasts

- International buffet restaurant
- All request for additional rooms not within this period, or in other room categories will be subject to room availability and terms to be agreed upon.

### Arrival

Upon arrival at hotel, all participants have to register to collect the following items:

- Hotel key
- Student contest pass, goodies bag and t-shirt

### Travel insurance

Travel insurance is not included in the package. All guests are advised to purchase their own insurance for the event.

### Meals

- Package include international buffet breakfast.
- Arrangements for special dietary such as vegetarian food subject to hotel availability. Country partners have to state inside the registration guest list.
- No last minute meal dietary requests can be arranged.

### Triple occupancy rooms

- Triple occupancy rooms are available based on first-come-first-serve basis.

### Hotel

- All the standard package is based on the 5-stars or 4-stars hotel in Shenzhen.
- SIMCC reserves the right to change the itinerary and hotel arrangements.

### Check-in and Check-out Date and time

- Check-in time is from 1500 hours. Check-in before 1500 hours is subject to room availability.
- Check-out time is before 1100 hours. All late check-out requests after 1100 hours are subject to availability and there will be additional charges from the hotels for late check-out.
- All standard package is based on 6 days 5 night.
- Guests will be responsible for handling any room extensions individually unless the majority or all of them opt to extend their stay together. Additionally, please note that the room rate may vary for the extended day.
- Simcc reserves the right to adjust the package price in case the hotel room rate increases due to late registration.

### Cancellation Policy

- SIMCC reserves the right to charge full amount of the package for any cancellation after 12th November 2025

### No show

- Should there be no-show for confirmed reservation; a charge for full package will be levied as no-show charge. Thereafter, SIMCC reserves the exclusive right to release and resell the package.

### Hotel

- All the standard package is based on the 5-stars or 4-stars hotel in Shenzhen.
- SIMCC reserves the right to change the itinerary and hotel arrangements.

### Transport

- Airport pickup and departure arrangement are not included during the pickup and departure duration.
- Transportation only include contest venue for students and Gala Lunch for all the registered guests.







# CLASH OF MATH TITANS IJMO 2025



## To Support Countries Who Enroll More Than 1,000 Contestants For SIMCC Contest – AMO 2025:

AMO 2025– from the country will be selected to represent their country to compete at

Each eligible country must submit the List of contestants to SIMCC by December 2025. We will announce the countries which have qualified for CMT 2025 with 1000 or more AMO 2025 contestants by November 14, 2025

**Bonus for Countries Who Enroll IJMO Contestants get a Multiplier of 3 for the IJMO Contestants and if AMO 2025 IJMO Enrollment**

- Each country can assign their team members from any grade level, but the grade level must have at least 50 contestants, else they will have to assign that honor to another team representative at another grade level.

**THE WINNING COUNTRY TEAM WILL TAKE HOME THE PRESIDENT'S CHAMPION COUNTRY TROPHY AND EACH TEAM MEMBER WILL GET A CERTIFICATE**

The winning team will be the Global Country team with the lowest score based on the position of the 6 team members (must be the nominated 6 and cannot change)

## How Points will be calculated?

- It will be the total from the global rank of the 6 Team members. So, if the members are ranked Global Rank 1st, 3rd, 7th, 12th, 5th, and 8th, Country Team Score = 36 points
- The country with the lowest score will be declared the champion country, followed by the 2nd lowest score, and the 3rd lowest score

## Clash of Math Titans IJMO Country Team Championship

Top 6 country representatives will be selected by Country partner.

These top 6 country contestants will be in the exclusive CTM IJMO Country Team Championship

There will be 3 winning teams :



**Global Country  
Champion Team**



**Global Country  
Runner Up Team**



**Global Country  
2nd Runner Up Team**

## Clash of Math Titans – IJMO Country Team Championship

|                                                   | Global Country<br>Champion Team | Global Country<br>Runner-Up Team | Global Country<br>2nd Runner-Up Team |
|---------------------------------------------------|---------------------------------|----------------------------------|--------------------------------------|
| <b>Award for CCP</b>                              | Champion Trophy                 | Runner-Up Trophy                 | 2nd Runner-Up Trophy                 |
| <b>Awards for<br/>Team Members</b>                | Certificates                    | Certificates                     | Certificates                         |
| <b>SLSP Team<br/>Scholarship<br/>Points (SPs)</b> | 2 Team SPs each                 | 1 Team SP each                   | 0.5 Team SP each                     |



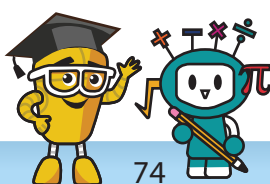
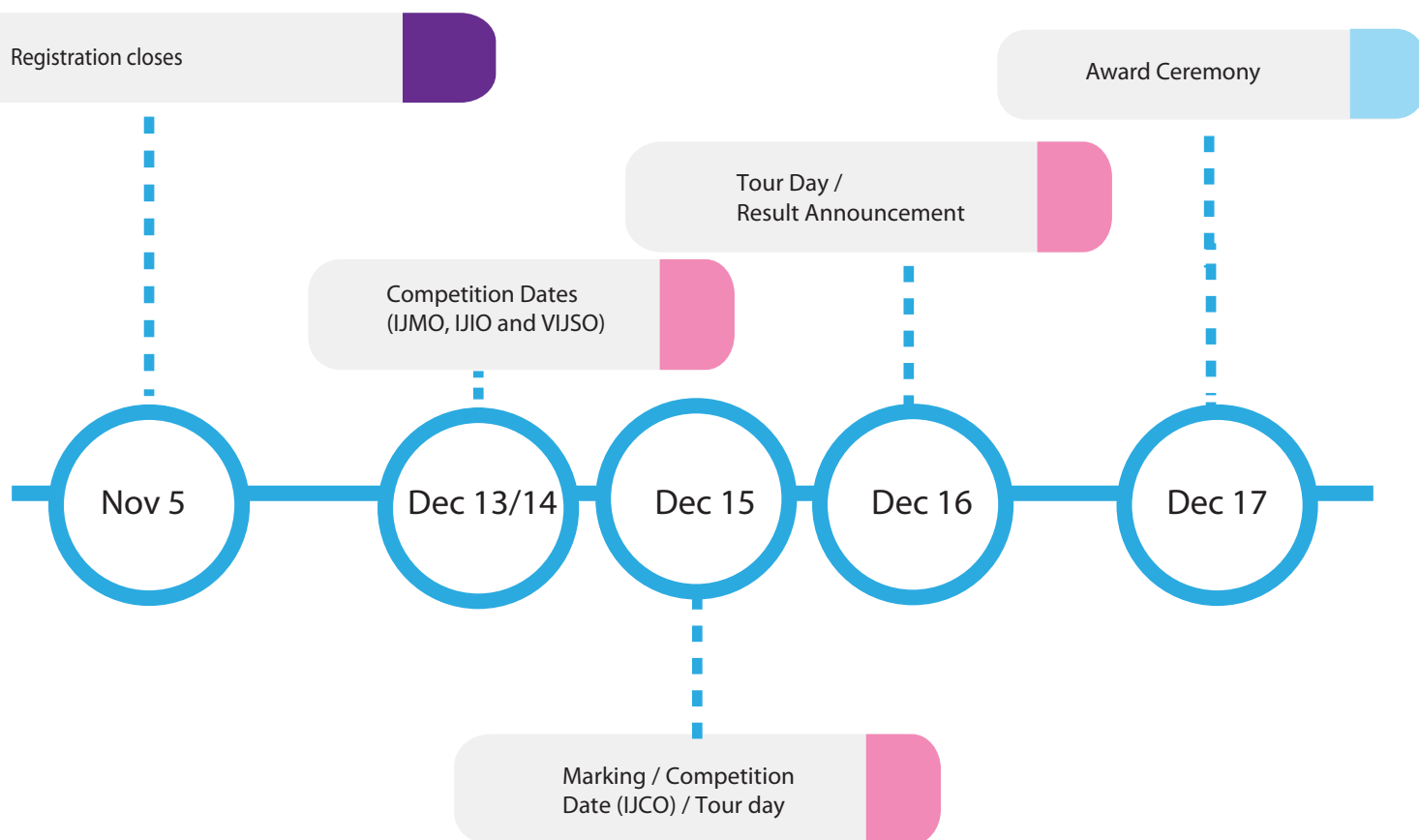
# Registration Information

## Where to Register

Kindly check with your country partner for registration and competition details. For more information about your country partner, please refer to our website below  
<https://simcc.org/country-partners/>

## Registration Fees

## Timeline





# STEAM INTERNATIONAL TOURNAMENT

There is a strong demand globally for STEAM talent led by corporations to get talent for their businesses. Hence, SIT is a great initiative to identify these talents for corporations and also various organisations giving scholarships to prepare talent for STEAM.

## STEAM INTERNATIONAL TOURNAMENT (SIT)

SIMCC and Scholastic Trust Singapore (STS) is delighted to enhance the STEAM International Tournament (SIT). SIT is a collection of reputable academic competitions in Science, Mathematics, Informatics, Cybersecurity, AI, and Arts which help distinguish student's achievements in STEAM. Students who win awards in any of the qualifying contents below score points for the SIT Awards:

1. Science = Vanda National Junior Science Olympiad (VNJSO)
2. Informatics = National Junior Informatics Olympiad (NJIO), National Junior Cybersecurity Olympiad (NJCO), National Junior AI Olympiad (NJAIO)
3. Arts = Singapore International Art Tournament (SIAT)
4. Mathematics = American Mathematics Olympiad (AMO) and Singapore and Asian Schools Math Olympiad (SASMO)

### Rules

1. Each student will be awarded SIMCC Individual Scholarship Points (ISPs) from each contest.
2. SIT ISPs must be collected within one academic year from August 1 to July 31.
3. The SIT ISPs collected will determine the SIT Award won for that year.

### IJHS Individual Scholarship Points (ISPs)

Grant additional IJHS Scholarship points based on the combined awards received from SASMO, AMO, VNJSO, NJIO, NJCO, NJAIO, SIAT.

**SIT Star Award** → Earn extra 3 IJHS Individual Scholarship points (ISPs)

**SIT Gold Award** → Earn extra 2 IJHS Individual Scholarship points (ISPs)

**SIT Silver Award** → Earn extra 1 IJHS Individual Scholarship points (ISPs)

**SIT Bronze Award** → Earn extra 0.5 IJHS Individual Scholarship points (ISPs)

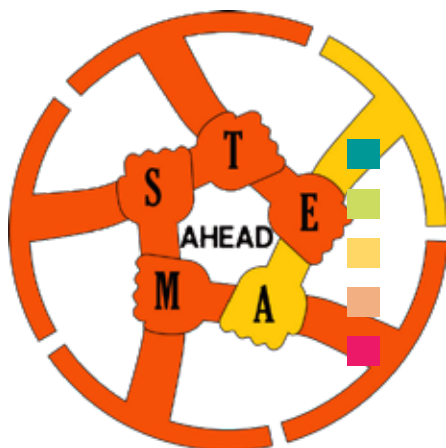
Table of scholarship points from all SIMCC competitions. SIT awards will be announced together with the induction of IJHS Scholars annually on August 19.2026

| National Contest award | Perfect Score | Gold | Silver | Bronze | Honorable Mention |
|------------------------|---------------|------|--------|--------|-------------------|
| ISPs                   | 3             | 2    | 1      | 0.5    | 0.25              |

| Combined Qualifying National Contest IJHS Scholarship Points | >10 ISPs | 8 to 9 ISPs | 6 to 7 ISPs | 5 ISPs     |
|--------------------------------------------------------------|----------|-------------|-------------|------------|
| Award                                                        | SIT Star | SIT Gold    | SIT Silver  | SIT Bronze |
| Bonus ISPs for this award                                    | 3        | 2           | 1           | 0.5        |

# STEAM AHEAD

(A combination of 5 COMPETITIONS: IJMO, VANDA IJSO, IJIO, IJCO, and IJAO.)



## School

STEAM stands for Science, Technology, Engineering/Entrepreneurship, Arts and Mathematics. STEAM AHEAD is our initiative to combine our international academic competitions to educate students and bring them international exposure about possible career choices in these fields.

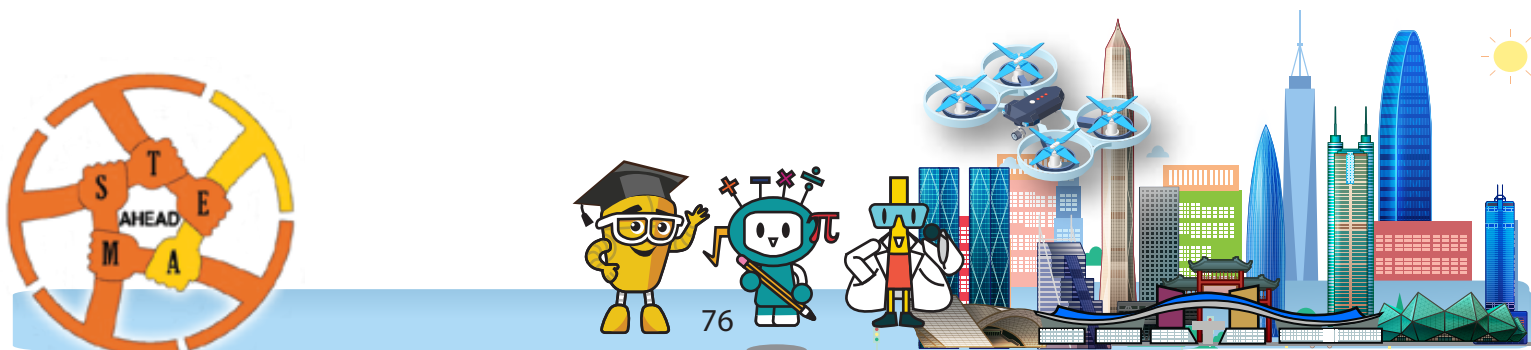
So, STEAM AHEAD offers multiple opportunities for students to win individual awards in IJMO, VANDA IJSO, IJIO, IJCO, and IJAO plus Team awards for VANDA IJSO, IJIO, and IJCO.

Overall Champions in each grade level for IJMO, IJIO, IJCO and VANDA IJSO will also be awarded, along with multiple contest winners from IJMO, VANDA IJSO, IJIO, IJCO, and IJAO will be awarded the President's Award for Excellence in STEAM (PAExS) - more than 100 awards can be won at STEAM AHEAD 2025!

PAExS Steam Ahead Awards:

1. PAExS Star = Students win 3 Gold medals from individual round
2. PAExS Gold = Students win 2 Gold medals from individual round

WEBSITE: <https://steamahead.simcc.org>







**Singapore International Mastery Contests Center**

