

2024 World GreenMech Contest Manual



Hosts



UNIVERSITAS
KATOLIK
PARAHYANGAN

Co-Organizers



世界機關王協會
World Forum For GreenMech Promotion

Rumah[®]dukasi



World GreenMech Contest

2024

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World GreenMech Contest

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Overview

1. Overview

Contest Purpose

The 2024 World GreenMech Contest is a fun engineering competition run by the World Forum For GreenMech Promotion and Rumah Edukasi (Indonesia). Using scientific principles, this competition combines the following five aspects of learning and growing: Science, Technology, Engineering, Art, and Mathematics, also referred to as STEAM. There are three contests: (i) GreenMech (ii) R4M and (iii) GreenMech Jr.

The two contests GreenMech & R4M inspire contestants to engage in scientific study, creative problem solving, and help them better understand use of scarce resources in project planning. Contestants can enjoy pitting their different skills and creativity against each other in a fun and friendly environment. There is ample opportunity for all contestants to show the benefit of their contribution.

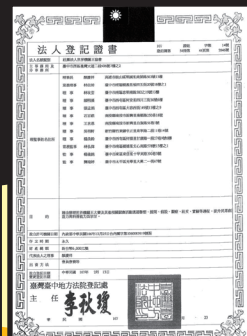
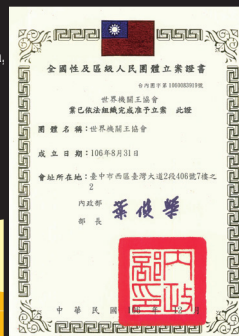
The GreenMech Jr. contest has two components – “Jr. Science” and “Jr. Programmer”. Jr. Science is an entry level opportunity for learners to get involved in simple engineering projects. It's specially designed for children age 5-9. Jr. Programmer uses a variety of code oriented challenges to develop programming logic and problem-solving skills. Contestants can enjoy all the fun of hands-on design, teamwork and scientific literacy. The structure of the course, combined with a fun learning environment, means that children absorb the knowledge, skills and experience, taking it into their adult lives.



In order to meet the needs of multinational competition promotion, the eight-nation alliance was signed in 2012. In 2024 has been growing to become 17 regions: (add Indonesia, Malaysia, Vietnam, Mongolia, Macao)



S S = Science
T T = Technology
E E = Engineering
A A = Art
M M = Mathematics



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Introduction

2. Introduction

The GreenMech contest was established in 2006, this year we are celebrating the 17th annual contest !



GreenMech (GM, since 2006)

- Inspiring children's enthusiasm for learning.
- Giving children the opportunity for hands-on engineering experiences.
- Turning textbook knowledge into real, design solutions.
- Work in tight-knit teams (3-4), designing and assembling within challenging time limits.



Robot for Mission (R4M, since 2015)

- Inspiring creativity and curiosity about scientific techniques.
- Extending experiences from WGM to include remote control and programming functions.
- Work in tight-knit teams (3-4), designing and assembling within challenging time limits.



GreenMech Junior (GMJr, since 2018)

- Opportunities for our youngest engineers & designers to get involved. (Designed for kindergarten and elementary school grades 1 to 4).
- Simple task design allows students to enjoy hands-on fun while learning valuable teamwork skills.

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Contest Schedule

3-1. GreenMech (Basic) Schedule

Time	Item	Remarks
07:30 ~ 08:00	Registration	<ol style="list-style-type: none"> 1. Time to enter the venue and find your own team table. Please put all the contest material under the table in order. Contestant can start to assemble the Jumbo Base Grid (60*180 cm) on table. 2. Only contestants may be in the competition area after 8:00 a.m. Team leaders and parents/guardians are not permitted after this time.
08:00 ~ 08:20	Materials Check & Registration Check	<ol style="list-style-type: none"> 1. The team leaders shall not enter the competition venue after 8:00 a.m. 2. Judges will carry out a building materials inspection. Except for the chain, no blocks may be assembled in advance. 3. After a brief inspection, teams will be given a "CHECKED" label, whereupon contestants should sit at the table and may not touch the materials. 4. Personal items can be brought into the venue but must be placed on the table in conjunction with the inspection records. 5. Contestants need to present their Certificate of Student Enrollment at this time, see the Regulations more information.
08:20 ~ 08:40	Clarification of Rules	Judge will give announcement, all teams please listen carefully
08:40 ~ 09:10	Opening Ceremony	Can watch the opening ceremony live from Youtube: "MAM RUMAHEDUKASI" and "WorldGreenmech."
09:10 ~ 10:40	Production & Testing Time	<ol style="list-style-type: none"> 1. Please observe all competition rules. 2. When leaving, do not run, be careful not to touch another group's work. 3. There will be 90 minutes between commencement and lunch.
10:40 ~ 12:30	Appraisals	<p>Team will be assessed by 5 judges (A,B,C,D,E), every judge will sign the judge signature paper on the table after finish scoring the team.</p> <p>Team can leave the venue and bring personal belonging to have lunch after 5 judge sign the paper.</p>
12:30 ~ 14:00	Lunch (leave the competition room)	Team can meet teacher or parents to have lunch on 1st floor or 3rd floor.
14:00 ~ 15:00	Feedback and Communications	Teachers and parents can go up to the 2nd floor together with the team to see the GM Basic project and the team can start tidying up the GM Basic Construction.
16:50 ~	Award Ceremony (align with WGM Advanced and R4M)	The award ceremony venue for GM and R4M is in the same place (it is in opening ceremony place).

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Contest Schedule

3-2. GreenMech (Advanced) Schedule

Time	Item	Remarks
07:30 ~ 08:00	Registration	<ol style="list-style-type: none">1. Time to enter the venue and find your own team table. Please put all the contest material under the table in order. Contestant can start to assemble the Jumbo Base Grid (60*180 cm) on table.2. Only contestants may be in the competition area after 8:00 a.m. Team leaders and parents/guardians are not permitted after this time.
08:00 ~ 08:20	Materials Check & Registration Check	<ol style="list-style-type: none">1. The team leaders shall not enter the competition venue after 8:00 a.m.2. Judges will carry out a building materials inspection. Except for the chain, no blocks may be assembled in advance.3. After a brief inspection, teams will be given a "qualified" label, whereupon contestants should sit at the table and may not touch the materials.4. Personal items can be brought into the venue but must be placed on the table in conjunction with the inspection records.5. Contestants need to present their Certificate of Student Enrollment at this time, see the Regulations more information.
08:20 ~ 08:40	Clarification of Rules	Judge will give announcement, all teams please listen carefully
08:40 ~ 09:10	Opening Ceremony	Participants attend the opening ceremony.
09:10 ~ 11:50	Production & Testing Time	<ol style="list-style-type: none">1. Please observe all competition rules.2. When leaving, do not run, be careful not to touch another group's work.3. There will be 160 minutes between commencement and lunch.4. By 11:00 a.m the Scientific Principles reference table will be collected by the Organizer.
11:50 ~ 12:30	Lunch	Remember to assist in sorting the trash.
12:30 ~ 12:50	Announcements	<ol style="list-style-type: none">1. Contestants should wait for the Organizer's announcements and then be prepared to continue.2. If Contestants are not present at this time, they may not continue with the competition.
12:50 ~ 13:00	Fine-tuning	Wait for the Organizers instruction to begin.
13:00 ~ 15:30	Appraisals	Team will be assessed by 4 judges (A,B,C,D), every judge will sign after finishing scoring the team and team can leave the venue and bring personal belonging.
16:00 ~ 16:30	Grading Time / Feedback and Communications	Parents teachers and peers may enter and discuss the projects and after that can tidy up.
16:30	Award Ceremony	Organizers make every effort to finish on time, but patients may be required depending on announcements and other possible delays.

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Contest Schedule

3-3. Robot for Mission (Basic/Advanced) Schedule

Time	Item	Remarks
07:30 ~ 08:00	Registration	<ol style="list-style-type: none"> 1. After registration, contestants should enter the venue and not leave until the event has concluded. 2. After 8:00 a.m. only contestants may be in the competition area. Team leaders and parents/guardians are not permitted after this time.
08:00 ~ 08:20	Materials Inspection	<ol style="list-style-type: none"> 1. Team leaders shall stay in their assigned areas after 8:00 a.m. and shall not enter the competition venue. 2. Judges will carry out a building materials inspection. Blocks may not be assembled in advance. Chains are the only exception to this rule. 3. After passing the materials examination, a label will be applied. Students should then sit at the table and wait without touching the materials. 4. Personal items like bags can be brought into the venue but must be placed on the table in keeping with the inspection record. 5. Contestants need to submit their Certificate of Student Enrollment, see the Regulations.
08:20 ~ 08:40	Clarification of Rules	Judge will announce the drawing, please listen carefully
08:40 ~ 09:10	Opening Ceremony	Participants attend the opening ceremony.
09:15 ~ 11:15	Assembly & Practice Time	Team can practice on the map appointed by organizer alternately maximum 2 minutes for basic team and 3 minutes advanced team.
09:40 ~ 11:30	Work Submission Period	<ol style="list-style-type: none"> 1. Check to confirm the robot does not contain metal parts. 2. The robots, plus any additional parts are weighed. 2.1. Basic: (Three robots: A, B, and C, or one spare car) 3. Participating robots (including any additional components) need to be verified by judges and will be retained until the contest time. 4. 5-Points may be deducted for messy or untidy work areas. 5. For robot size regulations please obey the regulations of R4M Basic and R4M Advanced. 6. After submitting a project, contestants need to clear away all items from the competition area including notebook, blocks, and any un-used electronic control equipment.
11:30 ~ 12:30	Lunch	After lunch contestants are expected to assist with sorting trash and keeping the competition area clean.
12:30 ~ 12:50	Announcements	When entering the venue, contestants may only carry a notebook, tablet or mobile phone, other items are not permitted.
13:00 ~ 16:00	Competition Time	Teams will be called forward one by one, take their robots from the sterilization box, and after 2 minutes competition, return their robots back to the sterilization box as directed by the organizer. Teams can take their robots back after the announcement of the competition results
16:30	Awards Ceremony	Organizers make every effort to finish on time, but some patience may be required depending on announcements and other possible delays.

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Contest Schedule

3-4. GreenMech Junior (Science) Schedule

Time	Item	Remarks
7 : 30-8 : 15	Registration and Materials Inspection	<ol style="list-style-type: none"> 1. Contestants should refer to the team location map on the official website before the contest begins, so they can go directly to their team table and report on the day of the contest. 2. Contestants should check the provided materials against the list they are given. If there is any part missing, the staff must be informed before the contest begins. Once the production time begins, materials cannot be replenished or replaced. 3. Contestants need to present their Certificate of Student Enrollment at this time, please see 11.1 in the full rule book for more information. 4. Contestants may only prepare additional parts according to the rules. Other parts cannot be brought into the contest.
8 : 15-8 : 40	Rules Reminder	Lot Drawing <ol style="list-style-type: none"> 1. The scoring area of 80 points for Competition One. 2. The number of heavy objects for Competition Two.
8 : 40-9 : 10	Opening Ceremony	Participants attend the opening ceremony.
9 : 10-9 : 35	Competition One: Assembly & Practice Time	<ol style="list-style-type: none"> 1. Contestants can only use materials provided by the organizer on site, please see 9.3 in the full rule book for more information. 2. Models produced for the competition are built and tested at the same time.
9 : 35-10 : 15	Competition One: In the Nick of Time Competition Time	<ol style="list-style-type: none"> 1. During the competition, the work and the peg remover should be placed on the storage box with the lid locked, and the rest of the materials should be stored in the box, and no other parts may be used for modification or production. 2. Models(including the work, and the slope) will be weighed before the competition begins.
10 : 15-10 : 35	Competition Two: Assembly & Practice Time	Contestants can only use materials provided by the organizer on site, please see 9.3 in the full rule book for more information.
10 : 35-11 : 15	Competition Two: Bomb Disposal Vehicle Competition Time	<ol style="list-style-type: none"> 1. During the competition, the work (with the rubber tires installed) and the peg remover should be placed on the storage box with the lid locked, and the rest of the materials should be stored in the box, and no other parts may be used for modification or production. 2. Models (including the work, and the slope) will be weighed before the competition begins.
11 : 15-12 : 00	Calculation and Confirmation of Scores	11 : 15 team can bring all their belonging and competition materials after finish doing the 2nd project competition.
12 : 00-12 : 30	Lunch	
12 : 30~	Awards ceremony	

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Contest Schedule

3-5. GreenMech Junior (Programmer) Schedule

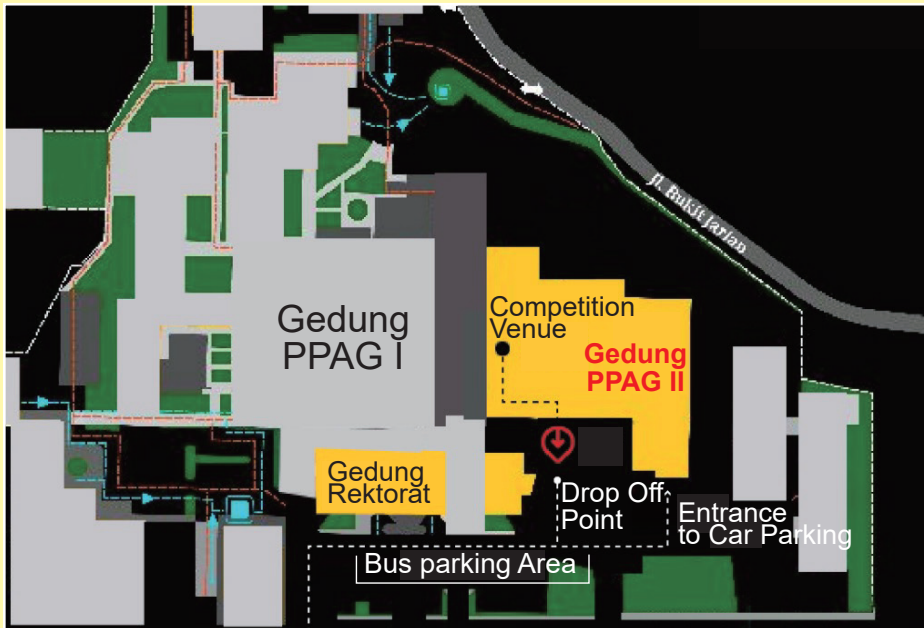
Time	Item	Remarks
07:30-08:15	Registration and materials inspection	Teams may bring up to 3 Base Units, but all device memories must be erased during inspection. No code cards or map cards should be pre-assembled. No block components should be pre-assembled.
08:15-08:40	Rules Reminder	
08:40-09:10	Opening Ceremony	
09:10-12:00	Official Competition Time (Lot Drawing) (Including Practice Time)	<ol style="list-style-type: none">1. 20 minutes before the official competition, teams draw lots to determine their goals for Task 3 and Task 4. Then, there is 20 minutes for teams to practice and prepare on their own in the team preparation area.2. After the 20-minute practice period, teams must disassemble the map cards into pieces, and then take them to the competition area and reassemble them during the competition time.3. Teams have 6 minutes to complete their contest. Contestants can place and assemble the map cards and code cards, and the robots can score points. There is no time allowed for stopping during the 6-minute contest.
11:40-12:30	Grading Time	After finish 6 minutes competition, team bring all belonging including the competition material out to meet teacher / parents and have lunch.
13:30~	Awards Ceremony	Awards will be given after the results are settled.

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Contest Floor Plan

4-1. Campus Map



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Contest Floor Plan

4-2. GreenMech Basic

Team Location Map

Judge Meeting Room

GB P1 TWN Great Master	GB P10 IND New Ocean Stars
GB P2 TWN Zhonggang GreenGiant	GB P11 IND PROSPEROUS ZERO
GB P3 TWN Nantou Zhi-Cheng Elementary School	GB P12 IND RADIANCE ROBOTIC TEAM
GB P4 THA KLONGYONG	GB P13 IND Shooting Stars
GB P5 VTN LAP VIETNAM 01	GB P14 IND Thunder Guardian
GB P6 MAL SJK(C) KUNG MAN MALAYSIA	GB P15 IND Thunderstorm
GB P7 CHN The Mulan Team	
GB P8 IND Alpha Edel 4	
GB P9 IND AZ Robotic	

GM Basic

2F

AUDITORIUM

Elementary School

Junior High School

Senior High School

DOOR

GB H1 TWN nexus force	GB H2 TWN 997 kg/m ³	GB H3 TWN FRIENDS FOREVER	GB H4 THA WPK TEAM	GB H5 IND ALMAKA GRACE	GB H6 IND Aspiring	GB H7 IND Avicena	GB H8 IND Fantastic 4 Albayan (F4A)	GB H9 IND Green Gems	GB H10 IND MAROON 4	GB H11 IND Navi	GB H12 IND PIIS BOTH
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MINI STAGE

GB S1 TWN Combo soup	GB S2 TWN RPJHS	GB S3 TWN 4 Idiots	GB S4 THA PKGTHEF 1st	GB S5 IND 7 Rings	GB S6 IND EagleTech Karunia Global	GB S7 IND Green Geniuses	GB S8 IND JUARA SQUAD	GB S9 IND M-Five		GB H13 IND Quadruple	GB H14 IND TEAM MIMU
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Robot for Mission

4-3. Robot for Mission

Team Location Map

STAGE								1F	
VIP INVITATION GUEST									
R4M (Basic & Advanced)									
R4M VENUE BASIC A		R4M VENUE BASIC B		R4M VENUE BASIC C		R4M VENUE ADVANCED D		R4M VENUE ADVANCED E	
RB P1 TWN Kingsman	RB S1 TWN Pin tung yi ching Show pride in the world	RB S7 IND DARE TO BE A WINNER	RB H1 TWN The Dark Emperor of Time and Space	RA P1 TWN Agent King	RA S1 MAL Pusat PERMATA @Pintar Negara UKM	RA H1 TWN Animal Warriors	RA H4 IND NUMBER ONE		
RB P2 TWN wenya R4M_A	RB S2 TWN Don't know what to write	RB S8 IND SUTOMO 2 MEDAN	RB H2 TWN Apple theta	RA P2 TWN NPPS R4M Pioneers	RA S2 TWN Taiwan NO.1-B	RA H2 TWN log coffee	RA H5 IND Jupert Rones		
RB P3 TWN SHES	RB S3 TWN HIPPO EPIC	RB S9 IND Pride-C	RB H3 TWN Ant 180cm	RA P3 TWN DeeP infinity at SHES	RA S3 TWN Taiwan NO.1-A	RA H3 TWN DDDD	RA H6 THA SK Series		
RB P4 IND Robostar	RB S4 IND cybertruck	RB S10 IND Mecha Bot	RB H4 IND S1CIKAL Generation	RA P4 THA SYB Robot B	RA S4 TWN It's sweating on you back	RA S5 THA SK PLAY ALL TEAM II	RA H7 THA Lookbuddhaleela		
RB P5 IND A3D'TECH	RB S5 IND Robot's Carlo	RB S11 IND AUTOBOT P2C	RB H5 IND Bionic						
RB P6 IND G-Labs 1	RB S6 IND GATE OF HOPE	RB S12 IND STS01	RB H6 IND 2Fast						
RB P7 IND X'to 4U	RB P9 IND Genesis Evolution	RB S13 IND JTS IT	RB H7 IND Almaka Pursuing Future						
RB P8 IND Matra 2 Matraman	RB P10 IND Jakarta Taipei School ROBOT	RB H10 IND VICTORIOUS	RB H8 IND CyberWell						
		RB H11 IND Indiana Jones	RB H9 IND 4CM						
GM (Advanced)									
GA P1 TWN TCES	GA P4 HKG Cardcaptor Garden	GA P7 THA BRN. Saves The World	GA P10 IND Blue Fire	GA S1 TWN Haidilao	GA S4 HKG DrawFour	GA S7 THA Singrong krajome	GA S10 IND Dopaminers		
GA P2 TWN Advanced Assassin Team	GA P5 HKG Kei To Scientific Elite	GA P8 CHN A HORSE WITH DREAMS	GA P11 IND Green Force	GA S2 TWN tit for tat	GA S5 HKG League of Guardian	GA S8 MAC PCGreen	GA S11 IND Ocean Tarpat		
GA P3 TWN Animal 4	GA P6 HKG Royal Owl	GA P9 CHN Houyi shooting team	GA P12 IND Jaguar Army	GA S3 TWN Dream Kaohsiung	GA S6 HKG Ukiyo Ramen	GA S9 IND Advance Geniuses	GA H1 MAL Pusat PERMATA @Pintar Negara UKM		
				GA H2 THA SK Ecstatic Energy	GA H4 HKG CBB	GA H7 TWN Starfleet	GA H10 IND Country Road_ST5		
				GA H3 THA Lookpudum2	GA H5 HKG FSS	GA H8 TWN heart of ocean	GA H11 IND GMBUA		
				GA P13 IND The Savior	GA H6 HKG TCCS STEM TEAM	GA H9 TWN Pabo Racha	GA H12 IND Phantom Luck		

Elementary School

Junior High School

Senior High School

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GreenMech Junior

4-4. GreenMech Junior

Team Location Map

STAGE

VIP INVITATION GUEST

1F

GMJr. Programmer

GM JP MAP A

GM JP MAP B

GM JP MAP C

GJP 1 TWN Guava Black Tea	GJP 4 IND BE RICH (Respect Integrity Caring Honest)	GJP 7 IND extraordinary	GJP 10 IND Have Fun	GJP 13 IND Matra 1 Matraman	GJP 16 IND The Circle Angel	GJP 19 IND The Stars	GJP 22 IND X'to Thunderstorm
GJP 2 TWN Yuteh Beating Heart	GJP 5 IND Blue Starlight	GJP 8 IND Fab Two	GJP 11 IND Junior Robo Warriors	GJP 14 IND RoboProdigies	GJP 17 IND The Dreamers	GJP 20 IND X'to f orever one	GJP 23 IND Yakobian
GJP 3 TWN Uzps Blocks	GJP 6 IND CyberbotRAZ	GJP 9 IND G-Labs 2	GJP 12 IND Master Builder Junior	GJP 15 IND Seven Rocket	GJP 18 IND The Fastest King of Az-Zakiyah	GJP 21 IND X'to Lightning	GJP 24 IND Zodiac Light

GMJr. Science

GJS 1 TWN Winning is correct	GJS 6 IND Dynamic Kids	GJS 11 IND Great Kid	GJS 16 IND Let's Go Sukbar	GJS 21 IND Carlo Tech	GJS 26 IND Alpha edel 1	GJS 31 IND soka is the best	GJS 36 IND STAR KIDS	GJS 41 MGL We Together	GJP 46 IND X'to Shining
GJS 2 TWN meerkat	GJS 7 IND Inspirech Cangkang	GJS 12 THA PSP Super Girls Thailand	GJS 17 IND 251 Briliiant	GJS 22 VTN LAP VIETNAM 04	GJS 27 IND Alpha edel 2	GJS 32 IND Goldstar Gen-Z	GJS 37 IND Green Force	GJS 42 MGL Mazaalai	GJP 47 IND AstroCorps
GJS 3 TWN Der-Whau Awesome Engineers	GJS 8 IND Funtastic 174	GJS 13 THA PSP New GenTech	GJS 18 IND state elementary school 248 sindangarsi	GJS 23 VTN LAP VIETNAM 03	GJS 28 IND Brilliant Squad	GJS 33 IND 030 Cyborg Ssquad	GJS 38 IND Star Light	GJP 43 MGL Grand Mongolia	GJP 48 IND Java Sparrow

GM JS MAP A

GM JS MAP B

GM JS MAP C

GM JS MAP D

GM JS MAP E

GJS 4 HKG SKHTYE	GJS 9 IND Tegallega is cheerful	GJS 14 THA PSP Mu Ma Win	GJS 19 IND Best Stars	GJS 24 VTN LAP VIETNAM 02	GJS 29 IND Space exploration	GJS 34 IND Dragon Force	GJS 39 MGL Bright Mongolian Boy	GJP 44 IND Blue Ocean	GJP 49 IND RevB Infinity
GJS 5 IND be smart be good be happy	GJS 10 IND NEBULA	GJS 15 THA Wat Dang School NBITH.	GJS 20 IND The Powe of Girls	GJS 25 IND Alpha edel 3	GJS 30 IND Angela's Kids The Little Engineer	GJS 35 IND the best star	GJS 40 MGL My Mongolia	GJS 45 IND Adrenaline	



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Points to Remember



5. General Questions

GM Basic

Q1: Are the device labels mandatory for the Basic Group?

A1: Yes, you can use the 7.7.2. Advanced Group Device Labels 1-5, or you can create your own. The markers can be laminated.

Q2: Will teams be penalized if teams use simple processed items to match the theme?

A2: If the processing is done on the spot, it will not be penalized. However, if the judges determine that the processing was done beforehand, it will be penalized. It is recommended not to use pre-processed items.

Q3: Is the use of simple processed items discouraged or penalized?

A3: Please refer to Section 7.3.2.1. Material Specifications of the Regulations. If there is a need to use everyday objects (such as paper, wood, styrofoam, electronic circuit components etc.), these objects must be in their original, unprocessed form. Any cutting, assembly, or modifications of these objects for devices must be done on-site during the competition, and may not be preprocessed, glued, or assembled beforehand. During the materials inspection phase, any everyday objects that do not comply with the rules will be removed. During the scoring process, if any everyday objects are found to be in violation of the rules, the score of the device will be zero.

Q4: Can toy piano keys be used?

A4: Prototype iron pieces can be used but cannot be further processed.

Q5: Can balloons be inflated in advance?

A5: No.

GM Advanced

Q1: Are the device labels 1-8, or are they General 1-4, Creative 1, Green Energy 1-3?

A1: All the 8 devices must be labeled as 1-8. For example, as shown in the diagram in the Regulations 7.4.4. Criteria. For example, if teams set device 3, 4, and 7 as green energy device, and they must be labeled as Green Energy. For example, if teams set device 2 as the creative device, and it must be labeled as Creative Device.

Q2: We are using a 1 cm wide and 15 cm long plastic film to insulate the motor power supply. This plastic film has been cut out. Is this considered a processed item? Do we need to cut it on the spot?

A2: Processed items are only restricted in the Basic Group, and there are no restrictions in the Advanced Group, which means the teams of the Advanced Group can prepare the processed items before the registration. Non-Gigo pieces are defined as daily objects. However, 3D printed parts and laser cut parts must be used in accordance with the Regulations 7.2.3.



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Points to Remember



Q3: If we use water balloons, when can we fill water in and take them in to the competition area?

A3: After material inspection.

Q4: If a water balloon breaks, can we go out to fill it?

A4: If you need to walk out to fill water, you must ask the field control personnel. Walking around may affect other teams, so it is strongly recommended not to use water balloons.

Q5: What are the rules for daily object in the Advanced Group?

A5: All non-Gigo parts are defined as daily objects. If they are 3D printed or laser cut, they must be in part form, which is not assembled.

Q6: Can we solder the circuit beforehand?

A6: Yes, the Advanced Group can (not the Basic Group)

R4M Basic

Q1: Scoring criteria for 20-foot A-type containers?

A1: If the projection of a container (cube particle) falls within the 20-foot A-type Container Goal Area, it is considered scored. The yellow ring (bottle connector) extending beyond the area is irrelevant.

Q2: Are there any restrictions on the positioning of the temporary placement area for 20-foot A-type containers?

A2: There are no restrictions on how 20-foot A-type containers are placed. They can be rotated horizontally but not flipped. The colors must be yellow, green, and blue for each zone according to the regulations.

Q3: For the R4M Basic group, has the scoring for transporting green energy storage batteries to the green energy storage battery goal area been extended to the white area?

A3: The scoring area is within the white area as shown in the regulations.

Q4: When are the four ground contact points of the car inspected? Is it during registration or when the car enters the track?

A4: Only the body size is checked during registration. During the competition, the contact points are inspected to determine the score.



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Points to Remember



- Q5: Does each team in the R4M Basic group have one test period before the official competition starts on the track?
- A5: There is no test time before the competition. Testing can only be done during assembly.
- Q6: How long does it take for the car to be warned when it leaves the field?
- A6: The car will be warned as soon as it leaves the field.
- Q7: Does the line-following car in the Basic group have to be completely within the black line?
- A7: The scoring is not based on the position of the whole car body. Judges only check the five containers and two sensors, and these must be within the black line. The C car in the starting zone can be placed within the black outer edge for basic and advance group.
- Q8: Does the 20-foot A-type container get score in the Basic group if it is placed in projection without touching the bottom plate?
- A8: Yes, it scores if it enters the projection area.
- Q9: For the basic group, if a container or gear leaves the map during transportation, will points be deducted (if the vehicle has not completely left)?
- A9: No, points will not be deducted for that. However, if the car body leaves the map, points will be deducted for damaging the field once.

R4M Advanced

- Q1: Will points be deducted if the green 4-HOLE ROD in front of the fuel ball is misaligned?
- A1: If the green 4-HOLE ROD is displaced, it doesn't matter. However, if it falls off, it will be considered as damaging the field.
- Q2: Can the meteorite be reset by teams?
- A2: Yes, the meteorite can be reset after raising your hand to the judge and indicating your agreement.
- Q3: Can the teams assemble two spacemen?
- A3: No, the spacemen should be separate individual. But teams can stack two spacemen.
- Q4: How should the Fuel Hydrogen Tanks (for Task Six) be placed?
- A4: The yellow side of the fuel hydrogen tanks must face up in the preparation area (they can also be stacked). The direction of the blue side is not restricted.



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Points to Remember



Q5: Can rechargeable batteries be used?

A5: Yes, rechargeable batteries can be used, but they must comply with the regulations. Lithium iron batteries are not allowed.

Q6: What is the definition of robot repair (8.7.2.)?

A6: Robot repair does not allow for the replacement of clamps or the change of the robot's form. Other actions of repair are allowed.

Q7: Can the Advanced group use #1269?

A7: Self-propelled vehicles can use either #1206 or #1269.

Q8: How should the meteorite fragments be placed?

A8: The meteorite fragments can be placed in any way as long as they do not exceed the area boundary.

Q9: Can the fuel balls and fuel rods for Task 3 be placed and get scores on the yellow platform?

A9: No, the fuel balls and fuel rods can only be placed inside the green round rods and the space below the yellow platform to score. No points are awarded if they fall on the yellow platform.

Q10: Can the fuel rods be placed upright initially?

A10: Yes, the fuel rods can be placed upright initially.

Q11: Do all spare batteries need to be brought into the competition venue during registration?

A11: Yes, all spare batteries must be brought into the competition venue during registration. In the afternoon, only joysticks, mobile phones, tablets, and empty storage boxes can be brought in.

Q12: Can the automation platform extensions for the Advanced group touch the map or the Gigo pieces on the map or the architecture of the map?

A12: It cannot be connected to the field structure, but it can be placed and touched.

Q13: For the advanced group, is the spaceship(First-Class Ship and Special-Class Ship) allowed to be placed on the green connector bricks in the middle to get scores?

A13: It is allowed, and the Spacecraft Parking Area is within the boundaries extended by the two black base grids.

Q14: Can batteries be changed before the afternoon competition?

A14: Batteries within the check-in box can be changed, but not from external sources.



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Points to Remember



GMJr. Science -Competition 1

Q1: In Competition 1, if the weight on the device does not move after release, can we request a 30-second repair time to reposition it, or is it counted as 0 points?

A1: As long as it has not crossed the starting line, you can request a repair (provided it has not been used yet).

Q2: Teams can not prepare ropes, right?

A2: Correct. The only self-provided items are rubber wheels and 8*12 small base grids.

Q3: In Competition 1, if a single front leg is adjacent to the edge of the table (not suspended), does the team get bonus 10 points, making the score 90?

A3: All four legs must touch the effective scoring area, and one front end must protrude to score 90 points.

Q4: Is the rope the one provided in the box, and no scissors are needed to cut it?

A4: Yes, scissors will not be provided on site.

Q5: Will a new set of #1261 be provided for the competition?

A5: Yes.

Q6: To confirm, is the provided rope approximately 2 meters long?

A6: Yes.

Q7: Is the thickness of the foam mat about 2 cm?

A7: It will be known at the site. Teams have practice time to adjust their device.

Q8: Since only the rubber wheels and base grids can be brought, does this mean that tablets and paper materials cannot be brought in?

A8: Tools and parts are not allowed, but reference materials, tablets, and design drawings are permitted.

Q9: Should the heavy object not touch the ground, including the rope?

A9: None of the items in the device, including the rope, should touch the ground. If touched, this operation will be not get any scores.

Q10: Is it acceptable if the landing point of the leg is exactly 2 cm (e.g., a 2x2 brick)?

A10: Yes.



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Points to Remember



Q11: During preparation for Competition 1, can the back legs be lifted while holding the back foot?

A11: Yes.

Q12: Can the foam mat be removed during the competition?

A12: No, a uniform standard must be maintained.

Q13: Have you confirmed that the tire will not touch the table surface at the edge, considering the table height and the foam mat?

A13: Sure, we've confirmed. There will be no issue of the tire touching the table surface.

Q14: Will the weight for this competition be provided on site?

A14: The weight (rubber wheels) must be self-provided; it will not be provided on site.

GMJr. Science -Competition 2

Q1: If the blue gear is used as the vehicle's wheel, can it be used as a scoring gear?

A1: Yes, but teams must inform the judges which gear is the scoring gear before the competition. The judges will use the forwardmost projection of the blue gear within the valid scoring area on the track map as the basis for scoring.

Q2: For the switch, are there any restrictions? For example, if a part simply holds the vehicle and then it slides down automatically due to gravity when released, is that acceptable?

A2: Any type of switch is allowed (you cannot hold the vehicle or the slope).

Q3: If the base grid plate can be self-provided, can the connectors of the base grid be self-provided as well?

A3: No.

Q4: In the competition, is only the vehicle weighed, or is it the vehicle plus the slope?

A4: The vehicle, slope, and switch are all weighed.

Q5: Can the scoring gear be changed?

A5: Yes, teams can change the scoring gear during the three operation, but teams must inform the judges before the operation.



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Points to Remember



Q6: Are there 30 seconds for repairs for all three operations?

A6: Yes.

Q7: If the scoring area is drawn as Zone E (the edge of the table) as the highest area and the scoring gear's front end exceeds the map but the rear of the scoring gear is inside the map, can it still score?

A7: If part of the scoring gear is beyond the zone but part is still within the valid area, it can score. The score is determined by the forwardmost part of the scoring gear within the valid area.

Q8: In Competition 2, can teams move the slop backward?

A8: Yes, as long as it remains within the preparation area.

Q9: Is the preparation time 25 minutes for Task 1 and 20 minutes for Task 2?

A9: Yes.

Q10: Is there a specific gear required as the scoring indicator for the vehicle?

A10: Yes, the 40-tooth blue gear.

Q11: If the scoring gear extends beyond the edge of the table (not in the invalid area), can it still score?

A11: If the entire scoring gear extends beyond the map, it cannot score (anything outside the map is considered an invalid area).

GMJr. - Programmer

Q1: Can the base map card be replaced with other map cards?

A1: Not for Task 5 if teams want to get the points of Task 5. But there are no restrictions for other tasks.

Q2: Does a block count as scored if the edge of block enters the scoring area?

A2: Any scoring block with its edge in the scoring area (based on the map card) is counted as scored.

Q3: Can any map objects (blocks or map cards) be touched or moved while the robot is walking?

A3: Yes, as long as the robot is not touched.



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Points to Remember



Q4: Can a base map card be used instead of a regular map card?

A4: Yes.

Q5: In the renewable energy zone, is it okay if the green light flashes three times to get scores?

A5: Yes, it is considered scored after the green light flashes twice.

Q6: After check-in and material inspection, can we open the box and assemble blocks before drawing the scoring blocks' positions?

A6: No, assembly can only start after the drawing. And then teams start their own 20-minute preparation time.

Q7: If some robots lose their programmed memory after the 20-minute practice period, will there be additional time to reload the program?

A7: Yes, if robots lose their memory, teams will have up to 1 minute to reload the pre-arranged program before the 6-minute competition starts. No additional programming is allowed during this time.

Q8: Does "block state" include the decorative blocks on the robot or just the gripping arm?

A8: All components must be in separate state, which is not assembled.

Q9: If the robot simultaneously picks up a black coal block and a red natural gas block, can the red block be removed once it is scored at the thermal power plant?

A9: Yes, if it is already scored, it can be removed at an appropriate time.

Q10: If a scoring block is moved to H3, can it be repositioned in H3 during the next run to a more advantageous position? Does this mean students can touch the nuclear waste before the robot arrives?

A10: Any unscored block can be moved to the most advantageous position within the grid.

Q11: Is there a field to simulate in the preparation area, or can we only observe from the side?

A11: The Programmer's competition area is only open for use during the competition (In Science, teams can practice their device on the track).



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Points to Remember



Q12: Are the scoring blocks provided by the organizers or do we prepare them ourselves?
Does the windmill need to be assembled on-site?

A12: The scoring blocks are provided by the organizers. The windmill needs to be assembled on-site with self-provided parts by teams.

Q13: Do blocks need to stay in the scoring area to count as scored? If the natural gas block is placed in the thermal power plant and then moves out when the robot stops, does it still count?

A13: Once it enters the scoring area, it counts as scored.

Q14: Can blocks be repositioned before the robot reaches them?

A14: Yes, as long as the robot is not touched, teams can move it inside the drawn grid. But unscored blocks cannot be removed from the field and are considered obstacles until scored.

Q15: Will the judge announce the score for each task?

A15: Yes, the judge will announce the score when it is achieved.

Q16: After executing the base map card's mission, can the base map card be replaced with a regular map card?

A16: Yes, as long as the robot is not touched.

Q17: If the nuclear waste touches the stone wall when the robot turns in zones L4-L6, is there a penalty?

A17: No, the position of the robot body is the deciding factor. The arm of the robot is allowed to touch the wall line while turning.

Q18: Since there are 16 nuclear waste positions and only 8 are chosen, will the judge remind us if the map card is placed incorrectly?

A18: The judge will remind you if they notice during setup, but if it's discovered during competition, it will not count as scored.

Q19: If a scoring block is moved to H3, can it be repositioned in H3 during the next run to a more advantageous position?

A19: Yes, a scoring block can be moved to any advantageous position within that grid.

Q20: Is there a limit on the length and height of the robot's arm?

A20: Height is not restricted, but the entire robot must fit within a 15 cm x 15 cm boundary.



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Points to Remember



Q21: Can we assemble the map in the preparation area for testing?

A21: Yes, but it must be reassembled for the competition.

Q22: If we cannot bring our own printed large map, is it limited to paper work for testing the robot's route?

A22: Yes.

Q23: Can map cards of #7442-A be used ?

A23: Yes.

Q24: Can the scoring block be repositioned before the robot reaches it?

A24: Yes, as long as the robot is not touched.

Q25: Is the map on the ground or on a table during the competition?

A25: On the ground.

Q26: Can we use any parts from set 1261 for the GMJr. Programmer, including rubber bands?

A26: Yes, parts are self-provided.

Q27: Can the map cards be pre-assembled into larger sections to save time during practice?

A27: No, pre-assembly is not allowed.

Q28: During the competition, will each team be directly in front of their field?

A28: Teams will be around the track. Students can choose to be in front or stay in their preparation area.

Q29: Can we bring a board (like foam or cardboard) to place the program on, as recommended for city competitions?

A29: Yes.

Q30: After the base map card is executed and the robot needs to move forward (across the base map card), can a regular map card be placed on top of the base map card to allow the robot to pass?

A30: Yes, as long as the robot is not touched.



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Awards



6. Number of Teams in Competitions

	GM Basic	GM Advanced	R4M Basic	R4M Advanced	GMjr. Science	GMjr. Programmer
Elementary school	15	13	10	4	49	24
Junior high school	9	11	13	5		
Senior high school	14	12	11	7		
Total	38	36	34	16		



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Awards



7. Awards

7-1. World GreenMech Awards

(GM Basic & R4M Basic)

Position	Prizes	Number of Awards
Gold Medal (1 st place)	1. Award certificate for contestants and team leaders 2. Cash USD \$ 330 3. One Princess Cup Trophy	One team for each division
Silver Medal (2 nd place)	1. Award certificate for contestants and team leaders 2. Cash USD \$ 165 3. One Princess Cup Trophy	One team for each division
Bronze Medal (3 rd place)	1. Award Certificate for Contestant and team leaders 2. Cash NTD USD \$ 80 3. One Princess Cup Trophy	One team for each division
Honorable Mention Award	Award certificate for contestants and team leaders	For top 50 th percentile in each division, except teams receiving a gold, silver or bronze award
STEAM Overseas Educational Contribution Award	Award certificate for contestants and team leaders	For overseas countries

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Awards

7-2. World GreenMech Awards

(GM Advanced & R4M Advanced)

Position	Prizes	Number of Awards
Gold Medal (1 st place)	1. Award certificate for contestants and team leaders 2. Cash USD \$ 660 3. One Princess Cup Trophy	One team for each division
Silver Medal (2 nd place)	1. Award certificate for contestants and team leaders 2. Cash USD \$ 330 3. One Princess Cup Trophy	One team for each division
Bronze Medal (3 rd place)	1. Award Certificate for Contestant and team leaders 2. Cash NTD USD \$ 160 3. One Princess Cup Trophy	One team for each division
Honorable Mention Award	Award certificate for contestants and team leaders	For top 50 th percentile in each division, except teams receiving a gold, silver or bronze award
STEAM Overseas Educational Contribution Award	Award certificate for contestants and team leaders	For overseas countries



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Awards



7 -3. GreenMech Junior Contest Award (Jr. Science & Jr. Programmer)

Position	Prizes	Number of Awards
Gold Medal (1 st place)	1. Award certificates for contestants and team leaders 2. One product prize for each participant. 3. One Princess Cup Trophy	One team for each division
Silver Medal (2 nd place)	1. Award certificates for contestants and team leaders 2. One product prize for each participant. 3. One Princess Cup Trophy	Two teams for each division
Bronze Medal (3 rd place)	1. Award Certificates for contestants and team leaders. 2. One product prize for each participant. 3. One Princess Cup Trophy	Three teams for each division
Honorable Mention Award	Award certificate for contestants and team leaders	For top 50 th percentile in each division, except teams receiving a gold, silver or bronze award
STEAM Overseas Educational Contribution Award	Award certificate for contestants and team leaders	For overseas countries

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Awards

Remarks

- 1.The Contest Organizers hold the right to adjust the above prize schedules for any reason, which may mean increasing or decreasing them. The total number of teams entered in the competition may be a factor in deciding final prizes if the number of contestants' changes.
- 2.The Gold Medal, Silver Medal, Bronze Medal winners will be announced on the day of the contest. All certificates will be sent to the first named person listed on the registration document. Certificates will be sent after the contest and can be expected to arrive within one month of the award ceremony.
- 3.All contestants will be presented with digital certificates as a gesture of encouragement.
These certificates will be downloadable by contestants and team leaders after the contest, and can be printed by participants.
- 4.Merit certificates for winning teams will be sent out within one month of the completed contest. Please pay attention to official website announcements. Winning teams that have not received awards should contact the Organizer for replacements. In the event of incorrect personal information being submitted during registration (i.e. wrong name, mail or email address) postage and other costs for replacement will be borne by the contestant for USD\$7.
- 5.Winning Team Obligations Winning teams must cooperate with the Organizer to display and preserve their works. The Gold, Silver and Bronze Medal winners of the world-series of GM · R4M are required to provide their model for filming within one month of the competition, to facilitate promotion and further education. The award cash will be transferred to the team after the team provides the video.

GM, R4M & GMJr. Trophies

Contestant Medals





World Forum For GreenMech Promotion

Office: 7F, No. 406, Taiwan Blvd., Taichung, Taiwan, 403 R.O.C

Tel: +886-4-2320-3456 #38 Fax: +886-4-2320-3898

www.worldgreenmech.com



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