

# PETROSAINS RBTX CHALLENGE 2023



## RULES AND REGULATIONS



## INNOVATION Advance 13 - 17 years old

It is recommended that you review the general terms and conditions prior to reading the rules for a specific category, as the general terms and conditions apply to all categories throughout the entire competition.

Version: 15 April 2023

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## 1. INTRODUCTION

The Petrosains RBTX Challenge is a programme where all robotic enthusiasts gather to learn, discover, and battle their robotic creations on a common platform. Aligned with PETRONAS' statement of purpose to be a progressive energy and solutions partner, enriching lives for a sustainable future, the main theme for Petrosains RBTX Challenge 2023 is **Sustainability**. This means that the competition will focus on encouraging participants to develop projects that adopt sustainable practices, contribute to a more sustainable future and have a positive impact on the world.

**The Innovation Advance category aligns with SDG 9, which aims to promote industrialization and infrastructure and foster innovation. Innovators aged 13 – 17 years old are tasked to generate innovative ideas and solutions to build a prototype using Microcontroller and IoT, showcase and pitch their ideas and creations.**

## 2. TEAM COMPOSITION

- Each team must comprise of a maximum of **four (4) participants** and **one (1) mentor** who can be either a teacher or guardian.
- The age group for **Innovation Advance Category** is students between **13 to 17 years old**.
- This year, **Innovation Advance Category** is open to all students who reside both in and outside of Malaysia.
- Teams consisting of participants residing in Malaysia will be onwards referred to as local participants while participants residing outside Malaysia will be onwards referred to as international participants.
- All members of a team must either be local participants or international participants. A combination of local and international participants in a team is not allowed.

## 3. INNOVATION CATEGORY MECHANISM

The competition is divided into **Seven (7) phases** as per the following:

### **Phase 1: Registration**

- Participants are required to register online via RBTX Portal.
- Upon registration, participants will be granted full access to the portal to complete online learning modules and download certificates.

### **Phase 2: Basecamp**

- This Online Basecamp is a self-paced online video learning enrichment for participants and shall provide an overall idea of the Petrosains RBTX Challenge 2023 Innovation Advance competition structure, the designated challenge, as well as related learning modules such as Introduction to Internet of Things (IoT) and its tools.

- Participants are required to take the assessment in the RBTX Portal to proceed to the next level. The passing mark is 80%.
- After the registration closing date, participants are compulsory to attend a **live online briefing session**. This session is to share on overall competition structure and mechanism.

### **Phase 3: Proposal and Video Submission**

Participants are to submit the following:

- a. **Innovation Project Proposal:** Please refer to the attachments below. The proposal must be in ppt. format. The ppt. template can be obtained via RBTX Portal.
- b. **Pitching Video:** The video must be a maximum of two minutes in duration and in MP4 format. It is also compulsory for all participants to appear in the video. Videos can be uploaded on you tube, set as unlisted and remain until the end of the competition.
- c. Submission is through RBTX Portal. The video link can be either a YouTube or a Google Drive link.

### **Phase 4: Selection Phase**

- The Petrosains RBTX Challenge judging committee will review the submission of complete innovation project proposals and pitching videos. This shall be finalized and announced via Petrosains' official website. Judges' review will be based strictly on the rubric shared during the Basecamp.
- The decision of the competition judges in determining the finalists for this competition shall be final and no appeals against the decision will be entertained.

### **Phase 5: Bootcamp for Finalists**

- All local finalists are required to attend an online Bootcamp session as part of learning experience enrichment. This is inclusive of technical mentoring by both subject matter experts from academia and PETRONAS. The Bootcamp is optional for international participants.
- Participants are expected to develop a prototype for the Bootcamp session and there will be mock presentation sessions that will be guided by the technical advisors.

### **Phase 6: Mentoring for Finalists**

- The Mentoring phase will include a coaching session to equip finalists with relevant communication skills and familiarity towards stakeholder management.
- Each group will be given an hour online session via Microsoft Teams that will be updated after the bootcamp.
- All local finalists are required to attend the Mentoring session while it is optional for international participants.

### Phase 7: Grand Finals

- The teams are required to present their project creation at the Petrosains RBTX Challenge 2023 Grand Finals.
- Judges consisting of experts from academia and industry will evaluate the team's presentation according to the rubric shared during the Virtual Basecamp.
- The presentation schedule and mechanism shall be shared with the finalists during the Mentoring session.

### 4. JUDGING CRITERIA

- The judge rubrics emphasize on Smart Solutions & Functionality, Impact & Sustainability and Communication. Detailed rubrics will be shared during the Basecamp.
- For Grand Finals, the finalist will have a different rubric which then will only be shared during Bootcamp.

Criteria	Details
<b>Problem Statement</b>	Clear problem statement and well mapped under categories in the theme
<b>Proposed Solution</b>	The proposed solution is highly feasible to solve problem, and technology requirements is extensively included to develop the proposed solution
<b>Commercial Value</b>	The prototype/idea has very strong potential to be adopted, enhanced, and leveraged by PETRONAS or other relevant organizations. Commercially viable and has market potential. And the solution is very cost effective compared to other similar solutions even after it is being scaled up.
<b>Video Quality</b>	Audio, video is very clear. Very Creative storyline, very clear wording, and figure/images

### 5. THEME

Participants are required to tailor their projects to the following United Nations Sustainable Development Goals in creating a comprehensive innovative project that can contribute to a better and more sustainable future for all.

**Advance Category: SDG 9**

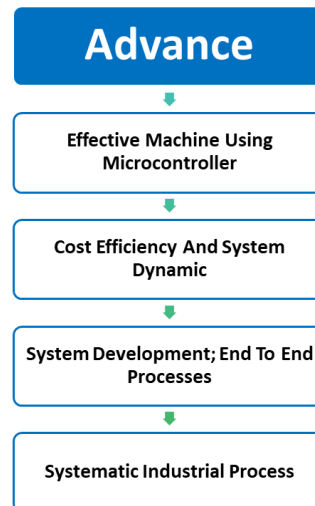


Link to United Nation Sustainable Development Goals:- [Measuring progress towards the Sustainable Development Goals - SDG Tracker \(sdg-tracker.org\)](https://sdg-tracker.org/)

## 6. PROJECT REQUIREMENT

The proposed solutions must align with the above-mentioned themes.

**Advance Category:** The project solution must be in the form of a product based on digital technology which consists of 'Internet of Things (IoT) technology (connectivity – a device-to-device communication using any wireless interface).



## 7. IMPORTANT DATES

Date	Events
18 May 2023	RBTX 2023- Registration Open
31 July 2023	RBTX 2023 – Registration Closed
18 May – 20 August 2023	Basecamp – Self Learning @RBTX Portal
5 August 2023	Briefing [Online]
20 August 2023	Proposal & Video Submission Closed
18 September 2023	Finalists Announcement
24 September 2023	Bootcamp for Finalists [Online]
11 & 12 October 2023	Mentoring for Finalists [Online]
26 October 2023	Petrosains RBTX Challenge 2023 – Grand Finals @ KL Convention Center

\*\* All dates are subject to change. Kindly refer to the website for the latest updates

## 8. CERTIFICATIONS

- Participants will be given certificates upon completion of Basecamp (Phase 2), complete submission of the Innovation Project Proposal and video (Phase 3), and Grand Finals (Phase 7).
- Teachers and mentors shall also receive the same certifications as an acknowledgement of participation.

# APPENDIX 1: TEMPLATE PROJECT PROPOSAL

**PROJECT TITLE**

RBTX 2022 : INNOVATION ADVANCE CATEGORY

Group Name:  
Video Link:  
Teacher's/Guardian's Name :  
Participants Name  
1.  
2.  
3.  
4.

Presenting The Education Centre/  
Petrosains Sdn Bhd (1989411-0) Level 4, Block B11C, PETROSAINS Twin Towers,  
Petronas City Centre, 10000 Kuala Lumpur, Malaysia  
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**Problem Statement**

**How will this project benefit the community**

**Project specification (with sketches)**

**Flowchart**

**Thank You**

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APPENDIX 2: COMPLETE SUBMISSION SAMPLE – FOR REFERENCE ONLY

# PENGESAN pH

**RBTX 2022 : INNOVATION ADVANCE CATEGORY**  
 Group Name: Michaellian  
 Video Link:  
 Teacher's/Guardian's Name :  
 Participants Name  
 1.  
 2.  
 3.  
 4.

PTETROSAINS, The Innovation Catalyst  
 Petrosains Sdn Bhd (1016713) (M) (Sole & Retail), 101671381 (M) (Sole & Retail)  
 Petrosains Sdn Bhd (1016713) (M) (Sole & Retail), 101671381 (M) (Sole & Retail)  
 Petrosains Sdn Bhd (1016713) (M) (Sole & Retail), 101671381 (M) (Sole & Retail)  
 Petrosains Sdn Bhd (1016713) (M) (Sole & Retail), 101671381 (M) (Sole & Retail)

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1

## Problem Statement

Technological advancements in the field of adult electronics are growing rapidly and are influential in the production of sophisticated tools, which are tools that work automatically and have high precision to make human work easier, economical and efficient. Automated systems in all sectors are unavoidable, so that initially manual use turns to automatic control. There is no exception to the process of raising fish that uses tools for convenience in their preservation. In the process of raising fish, the fish should be kept in mind for the pH value of the water in the pond.


During this time, the process of controlling and measuring the water pH of the tilapia fishpond was carried out manually. For example, measuring the water pH using a digital pH meter and then when the pH value is outside the tolerance limit, which is between 5.5-7.5 then it will be converted to fresh water until the desired water pH. However, the modern digital pH meter has its drawbacks, which are slow changes, which are an important issue in ensuring that the water pH is always suitable for tilapia fish farming.



2

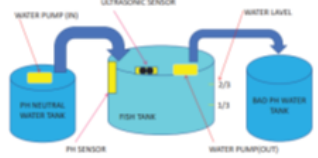

## How will this project benefit the community

It is easy to detect pH value. So, owner of fish farmer can monitor the condition of fishpond. It used application Think Speak, software that connect to product through Wi-Fi module. This product also good because it can save the time for fish farmer to check pH value of the water. This product function Automatically change the water went the pH is not suitable. It will pump out water until level we decide and pump in clear water until 2/3 of pond. This product also benefit user because it has automatic fish feeder with timer. So, the owner does not worry if go outstation because it operates automatically





3

## Project specification (with sketches)

4

## Flowchart

# Thank You

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