





INSPIRING INNOVATION  
**PENANG**  
SCIENCE CLUSTER

# WORKSHOP ON **'HACKATHON FOR TEACHERS'**

 28 & 29 June 2022

 Science Laboratory 2  
SEAMEO RECSAM, Penang, Malaysia

**Facilitator:**

Ms. Nurul Hamimah binti Abdul Razak  
Penang Science Cluster

**Target Participants:**

Lower Secondary Science Teachers



## RATIONALE

The rapid rise of Big Data, Internet of Things (IoT), and Artificial Intelligence (AI) applications, in light of society's rising digitisation, has enhanced the demand for experienced individuals in STEM fields. The craze surrounding these applications has presented STEM educators with a slew of new difficulties and opportunities (Benita et al., 2021). IoT is a global network that connects things and materials to the Internet to enable them to interact or communicate with their surroundings (Abd-Ali et al., 2020). IoT was introduced in education, allowing Internet-based communications to be used in between physical things, sensors, and controls. Massive changes were made to educational institutions by using embedding Augmented Reality (AR), sensors in things and incorporating cloud computing (Bagheri et al., 2016).

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. Introduced in 2005 the Arduino platform was designed to provide an inexpensive and easy way for hobbyists, students and professionals to create devices that interact with their environment using sensors and actuators (Louis, 2016). Arduino is an open source computing platform for building and programming electronic devices based on basic microcontroller boards. It can also operate as a little computer, taking inputs and regulating outputs for a range of electronic devices, exactly like other microcontrollers. Furthermore, the Arduino IDE makes programming easier by using a simplified form of C++.

## OBJECTIVE

At the end of the workshop, participants will be able to:

1. Learn the basics of electronics using Arduino microcontroller and how to create basic circuits with the breadboard.
2. Acquire Arduino programming language and Integrated Development Environment (IDE).
3. Cram how to troubleshoot and fix errors while developing basic Arduino circuits.

## EQUIPMENT

Equipment/material needed for the workshop will be provided by organiser and collaborator.  
**Participants are required to bring their own laptop.**

## WORKSHOP PROGRAMME

DAY 1 (28 June 2022, Tuesday)	
8.15 - 8.45 a.m.	Registration
8.45 - 9.00 a.m.	Briefing
9.00 - 10.30 a.m.	Overview of the Workshop and Introduction to Arduino
10.30 - 11.00 a.m.	Group Photo & Morning Tea
11.00 a.m. - 1.00 p.m.	Cont. Introduction to Arduino
1.00 - 2.00 p.m.	Lunch
DAY 1 (28 June 2022, Tuesday)	
2.00 - 3.00 p.m.	Introduction to Design Thinking + Sustainable Development Goals (SDGs)
3.00 - 4.00 p.m.	Group Project-Brainstorm

DAY 2 (29 June 2022, Wednesday)	
9.00 - 10.30 a.m.	Group Project: (1) Prototyping (2) Presentation Preparation
10.30 - 11.00 a.m.	Morning Tea
11.00 a.m. - 1.00 p.m.	Cont. Group Project
1.00 - 2.00 p.m.	Lunch
2.00 - 3.30 p.m.	Presentation
3.30 - 4.00 p.m.	Evaluation Closing & Certificate Presentation Ceremony Announcement of Winner & Certificate Presentation

## WORKSHOP FACILITATOR



**Ms. Nurul Hamimah binti Abdul Razak** is a Programme Executive at Penang Science Cluster. She obtained her Bachelors of Applied Science from Universiti Sains Malaysia majoring in Engineering Physics. She manages various programmes including Project Ignite Senior using Arduino MakerUno and TinkerCAD circuit simulation, TechMentor Robotics using Lego Mindstorms EV3 with EV3 Classroom and Open Roberta Lab simulation, Lab-on-Wheels to support Physics and Chemistry teachers, and Youth TechCamp to develop media literacy skills among youth.

## **PARTICIPATION FEES**

Type 1: RM 135 per participant (Without Accommodation)

Type 2: RM 245 per participant (Twin Sharing)

Type 3: RM 345 per participant (Single Occupancy)

## **ACCOMMODATION AT RECSAM INTERNATIONAL HOUSE**

Check-in: 27 June 2022, 2.00 p.m. onwards

Check-out: 29 June 2022, after the workshop

## **FOOD**

Morning tea and lunch will be provided by SEAMEO RECSAM during the workshop.

For stay-in participants (Type 2 & Type 3), breakfast will be provided too.

## **REGISTRATION, PAYMENT & CLOSING DATE**

Places are limited to a maximum of 25 pax and will be given on a first come, first served basis. To enroll, please register and pay online by **21 June 2022** via [shorturl.at/iyEH4](https://shorturl.at/iyEH4) or scan the following QR code. Upload your payment slip for confirmation of registration.



## **PAYMENT (INTERNET BANKING)**

Pay to: SEAMEO RECSAM

Bank: MAYBANK GELUGOR BRANCH, PENANG

Account Number: 5571 5700 0647

## **FOR ENQUIRIES**

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