

# Schools Program





# Agenda

## 01 Who Are We?

- ❖ Introduction
- ❖ Our team
- ❖ History

## 02 Why STEAM?!

- ❖ Why STEAM education?!
- ❖ STEAM Programs

## 03 STEAM Schools Activities

- ❖ What are the school STEAM activities?

# Why STEAM?!

Science – Technology – Engineering – Arts – Mathematics

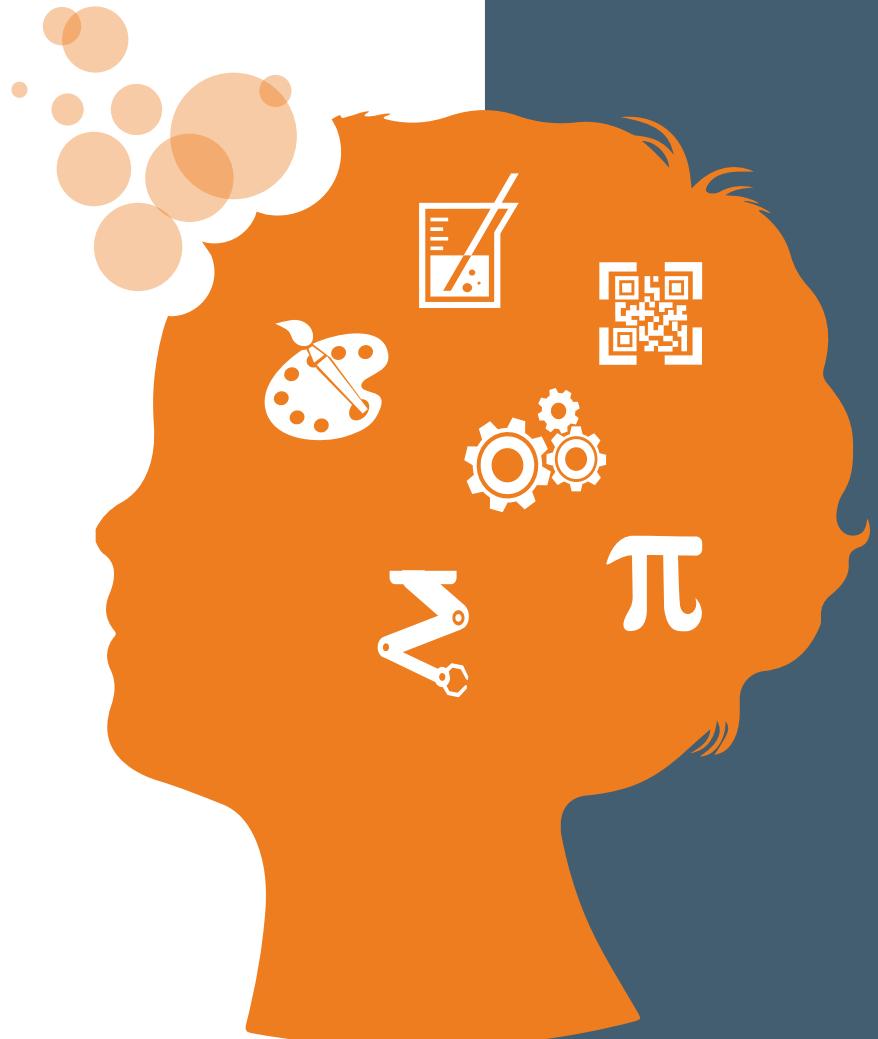
Why STEAM education?!

Because STEAM principals are consisting of the main five elements of practical life of the modern world.

STEAM programs provide practical knowledge and experiments in:

Technology, Talent and Life sciences, now these are the basics of our life and for the future also.

STEAM programs build the mentality to invent, innovate and find solutions by a right scientific methods.



# STEAM Programs



## Science

Practical experiments in sciences related to life  
(Physics – Chemistry – Biology)

## Technology

Practical workshops in modern world fields  
(Robotics – Programming – Machine learning – AI)

## Engineering

Practical workshops in life fields  
(Renewable energy – Fabrication – PCB)

## Arts

Learning basics and advanced arts  
(Sketching – Oil painting – Digital art)

## Mathematics

Practical mental methods to make math easier  
(UC – Osmo -

# STEAM School Activities

We provide several activities to suite with the school year and vacations. We provide STEAM programs for (Kg2 – Grade 12).



- 1 After school trainings
- 2 Workshops
- 3 Camps
- 4 Competitions
- 5 Curriculums



# After School Training

(AST)



Science Technology Engineering Arts Mathematics

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# 1- AST

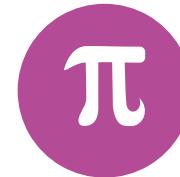
- It's practical trainings after school once per week.
- After every level students take certificate have the level they approached.



## Robotics

Robotics program provided  
Kids divided into 3 ages groups

- 1<sup>st</sup> group (5 - 7 years old)
- 2<sup>nd</sup> group (8 - 12 years old)
- 3<sup>rd</sup> group (13 to 17 years old)



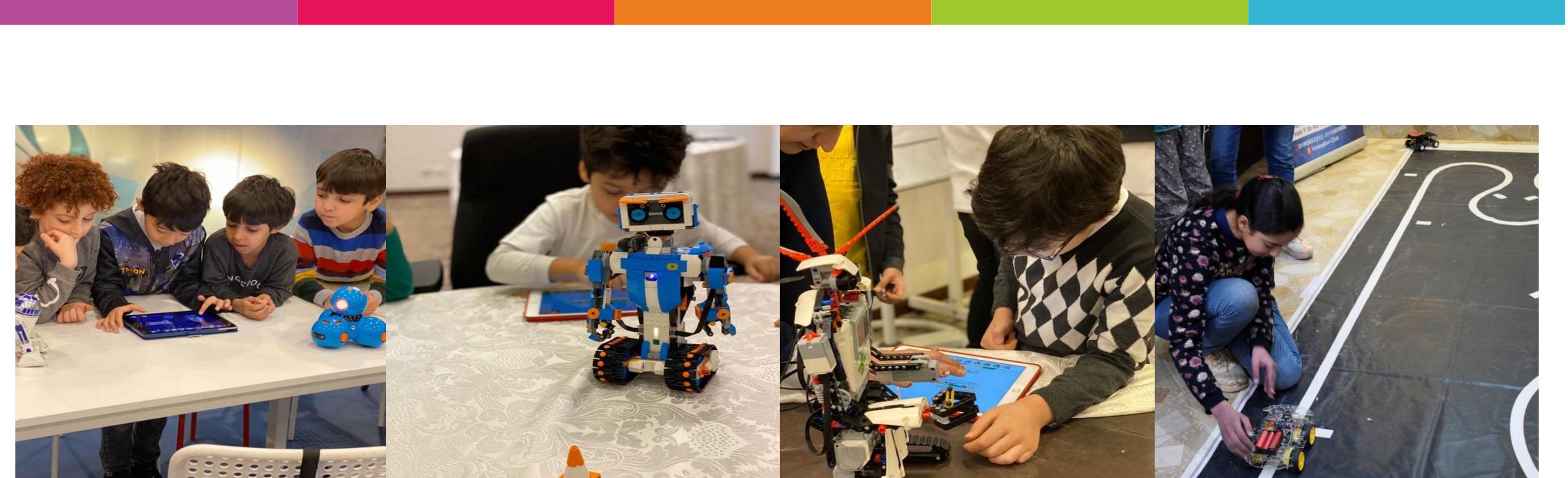
## Programming

Programming program provided  
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# AST Robotics



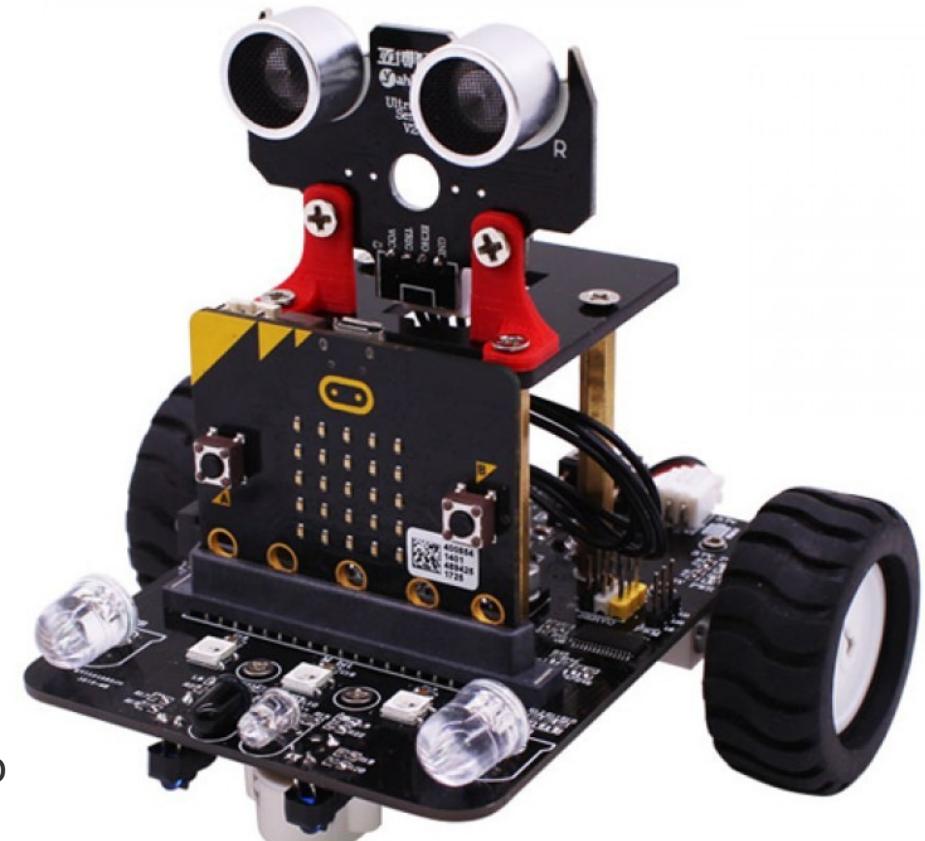
# Micro-bit

## OVERVIEW:

an open-source programmable electronic board measuring 4 x 5 cm that includes electronic parts and motion sensors, designed by the British Broadcasting Corporation (BBC) in collaboration with several parties "and recently joined the non-profit organization in Britain micro: bit Education Foundation.

## CONTENT INCLUDES:

- Know how to create a program, download to the micro: bit, and run the program
- Be able to identify inputs and outputs for the micro: bit and Maqueen
- Use code to control motor movement, lights, and sounds
- Understand how an ultrasonic sensor works and how to use it with MakeCode and the Maqueen robot
- Understand how light and line following sensors work and how to use them with MakeCode and the Maqueen robot
- Become more comfortable asking questions and troubleshooting
- Practice good coding habits; naming programs and using comments, saving and backing up code



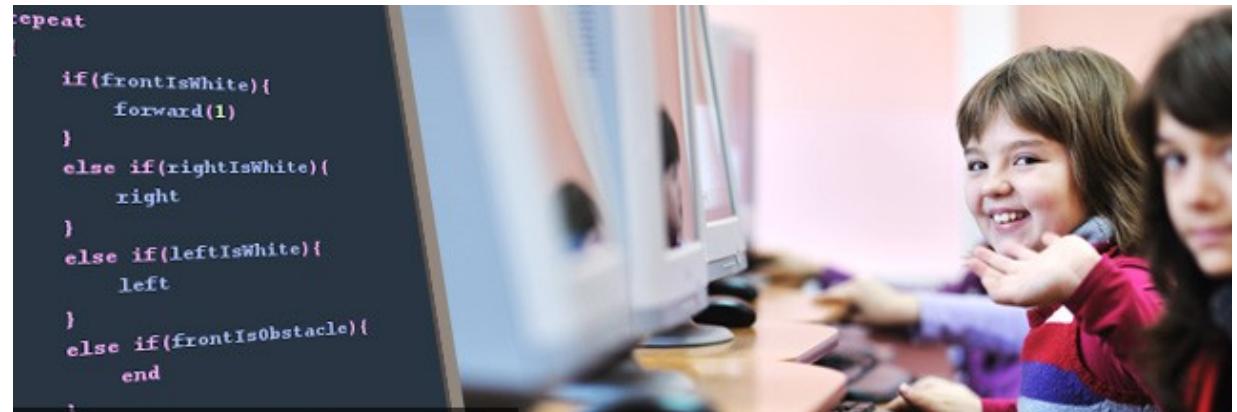
# Robomind

## OVERVIEW:

RoboMind is meant to be a first introduction to automation and programming without prerequisites. Because many different exercises can be done, the difficulty level can be tailored to students of various age and levels. In primary education, pupils from 8-year-old can get acquainted with writing commands to navigate the robot through its environment.

## CONTENT INCLUDES:

- Effective and motivating
- Attractive learning environment, engaging, fun to do!
- Uses computational thinking for problem-solving
- Increases the availability of rigorous computer science for all students
- Focuses on active learning and exploration
- Use computer science skills (especially computational thinking) in problem-solving activities in other subjects.



# Wedo 2.0

## OVERVIEW:

The WeDo 2 STEM Robotics Engineering course is designed for kids 7-9 years who already have basic skills. In this course we have deeper learning in mechanical engineering part to familiarize kids with gearings: overdrive, underdrive, rack and pinion, flying wheel, suspension, crank mechanism, for students who are interested in computer science and engineering will explain how the mechanisms and electronics of robots are interconnected.

## CONTENT INCLUDES:

- build their own models using **motors, motion sensors and tilt sensors**
- write programs for their models using **motor blocks, display blocks, flow blocks and inputs**
- create and document their own projects that combines all the knowledge of both the models they build and the programs they write
- participate in the *FIRST Lego League Junior* challenge by applying the knowledge gained in the course to come up with a solution to the challenge



# Seaperch

## OVERVIEW:

As an integrated STEM education program, SeaPerch guides participants through a real-world engineering and design project centered around building an underwater ROV. The program uses hands-on methods to equip students and teachers with the resources needed to learn basic science and engineering concepts like tool safety, technical applications, problem-solving, and teamwork skills.

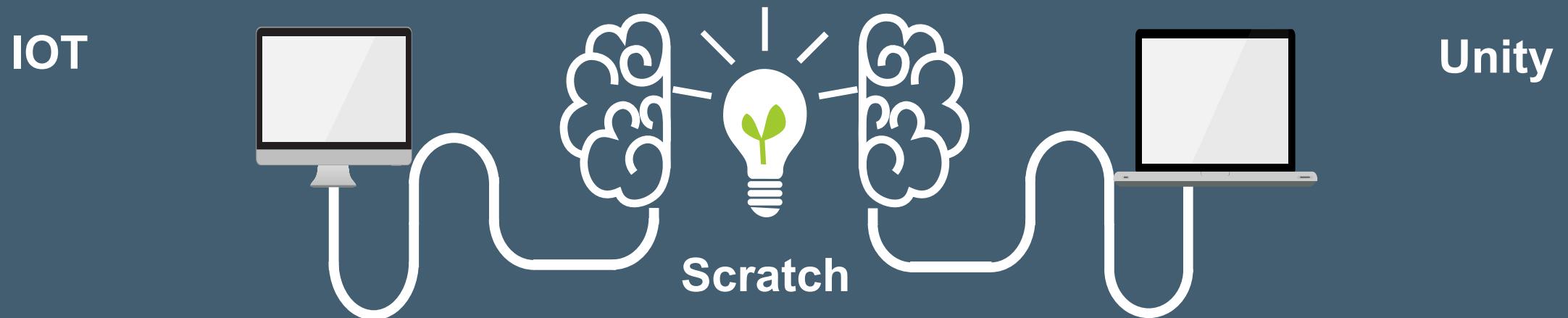
## CONTENT INCLUDES:

- Understand the term fluid dynamics and what constitutes a fluid
- Determine the different forces acting on an underwater ROV
- Understand the relationship between thrust and drag



# AST Programming

At the end of each program, there will be a capstone project for each student to show the result about what he/she has learned.



# Internet of Things

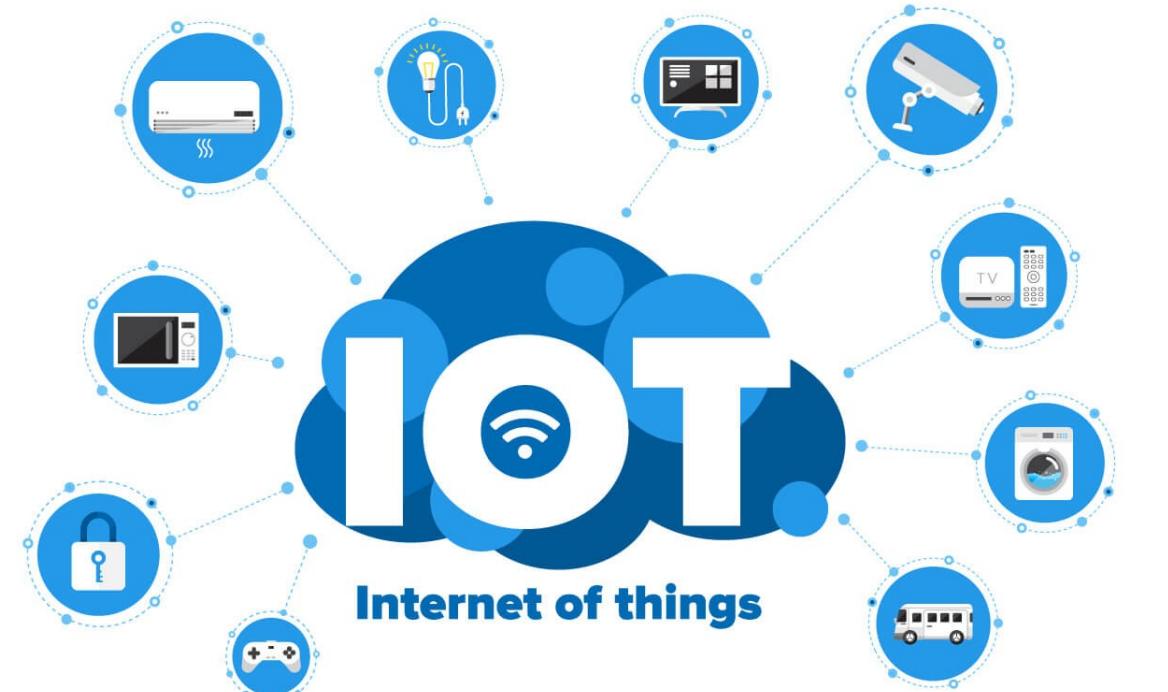
## OVERVIEW:

What is the Internet of Things? Digital materials are used in various materials and the media associated with the Internet is referred to as other materials. A virtual network that brings together the things that can bring together, connect, and connect your businesses, computers, sensors, and the Internet.

## CONTENT INCLUDES:

Our beginner lessons cover:

1. IoT Product Manager
2. IoT Architect
3. IoT Developer
4. Data Scientists
5. Robot Coordinator
6. IoT Cloud Engineer



# Tinkercad

## OVERVIEW:

Tinkercad is a free web app for 3D design, electronics, and coding. We're the ideal introduction to Autodesk, a global leader in design and make technology.

## CONTENT INCLUDES:

- Build a basic LED circuit.
- Connect and program an Arduino to control the circuit.
- Expand the circuit to add more LEDs.
- Build neat, organized circuits.
- Troubleshoot when things don't work as expected.



# Scratch

## OVERVIEW:

SCRATCH is a programming language that makes it easy to create interactive stories, animations, games, music, and art that can then easily be shared on the web. Scratch is designed specifically for young people (ages 8 and up) to help them develop 21st century learning skills: thinking creatively, communicating clearly, analyzing systematically, using technologies fluently, collaborating effectively, designing iteratively, and learning continuously.

## CONTENT INCLUDES:

- identify the objects in a Scratch project (sprites, backdrops)
- explain that objects in Scratch have attributes (linked to)
- recognise that commands in Scratch are represented as blocks



# Python

## OVERVIEW:

This course introduces students to the exciting world of programming using the Python language. Students will gain a basic understanding of Python and enhance their critical thinking and problem-solving skills as they learn to design, code, and debug Python programs.

Challenging assignments during the course encourage them to master important programming concepts such as variables, operators, and control flow constructs.

Students will use their creativity and imagination to draw different shapes on the computer screen and work with Turtle Graphics.

## CONTENT INCLUDES:

- To understand why Python is a useful scripting language for developers.
- To learn how to design and program Python applications.
- To define the structure and components of a Python program.
- To learn how to identify Python object types.
- To learn how to write loops and decision statements in Python.
- To learn how to use lists, tuples, and dictionaries in Python programs.



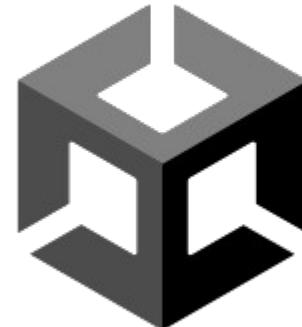
# Unity

## **OVERVIEW:**

is a computer coding and game design workshop for children aged 11-12, during which they will complete a number of video game coding and level design projects using the professionally-capable Unity games engine and the MonoDevelop scripting tool. Attendees will learn the basics of coding in the C# language, as well as how to operate the Unity engine to produce polished, fully-realised games.

## **CONTENT INCLUDES:**

- Game Components
- Renderers, Materials, Colliders
- C# Scripting
- Modelling Game Objects
- Unity UI & keyboard short-cuts



**Unity®**



# Camps



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# Vacations Camps

- ❖ In Vacations Winter and Summer, we make camps, that kids can make useful activates through STEAM principals.
- ❖ It's opportunity for kids to spend their free time learning about all STEAM branches.



## Science

Kids are making experiments in Chemistry, Physics and Biology



## Technology

Kids are using and knowing different types of Robots



## Engineering

Kids are making projects by them selves related to their life



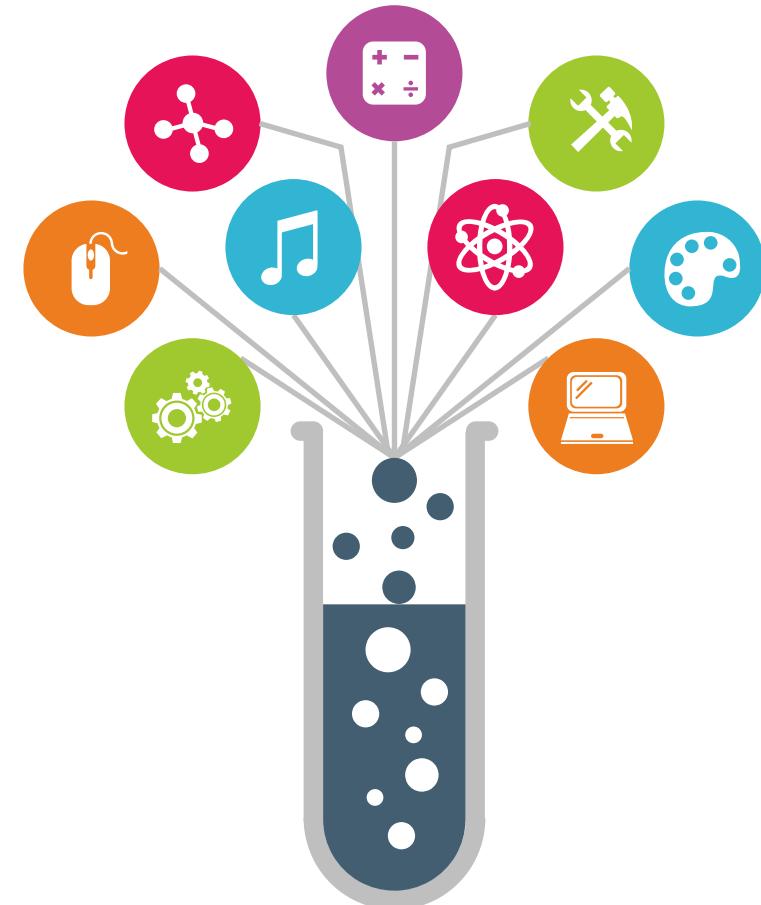
## Arts

Kids are learning new techniques in different types of Art.



## Mathematics

Kids learning different methods of mental math.



# Drone Camp

## OVERVIEW:

Our **drone flying course for beginner's** course covers all the basics that you need to know if you want to safely and legally operate a drone or remotely piloted aircraft system (RPAS). Ideal for beginners, it will give you the skills and knowledge you need to confidently take a drone into the air.

## CONTENT INCLUDES:

Our beginner drone lessons cover:

- Airspace and maps
- Potential dangers
- Laws and regulations
- Pre and post flight inspections
- Battery management and safety



# Fighting Robot Camp

## OVERVIEW:

Robotic and automated systems technology.

The student will be introduced to basic manufacturing techniques, robot terminology, different types of automation, safety, basic robotic programming, interfacing robotic communications, automated work cells, and robotic applications.

## CONTENT INCLUDES:

- Explain the major components of robotic systems
- Explain the definition of the characteristics term of robotic systems
- Define Degree of Freedom, Position Axes, Orientation Axes.
- Know how to use robots in fighting.
- Driving different techniques



# Soccer Robot Camp

## OVERVIEW:

In addition to football robots now can do what people do so let's Learn more about how we can build a robot and compete with other robot to score goals inside a mini football playground.

## CONTENT INCLUDES:

- Building of the robot
- How to drive it
- Coding principles
- Design Criteria



# Mine Sweeper Camp

## OVERVIEW:

Mines are so dangerous. We as humans can't go with ourselves To do such these detections. Robots can do it easily and we can Also program it to do several tasks.

## CONTENT INCLUDES:

- Robot Design
- Types of Wheels
- How to make metal detector sensor
- How to drive the robot autonomously
- Manual Driving
- Mapping systems to detect mines





# Science Camps



# Technology Camps





# Engineering Camps





# Arts & Crafts Camps



# $\pi$ Mathematics Camps



# Competitions



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# Competitions

## AST competitions

- After every level on every type of robot, there are competitions between students.
- Forming teams with the name of the school can participate in different competitions.



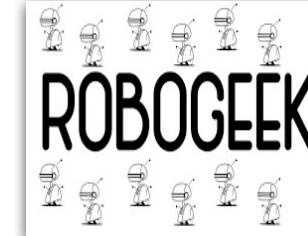
## International

- The final step is participating in international competitions with the name of Egypt.



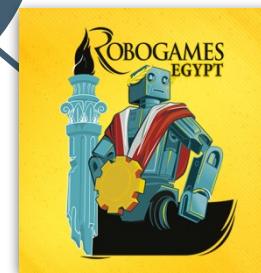
## RoboGeeks

- Innovation's annual competitions.
- 2020 will be the fifth time.
- Train teams on different types of competitions.

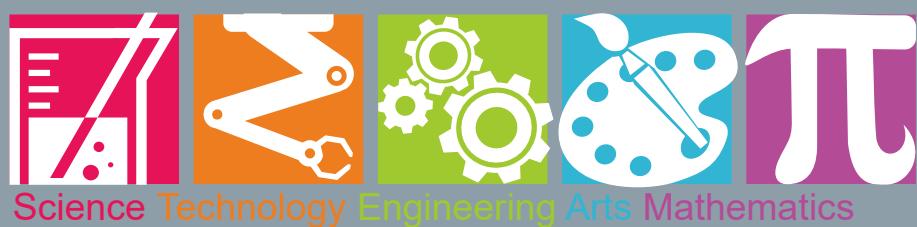


## National competitions

- Forming national teams from the best teams in RoboGeeks and make them participate in national competitions.



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Thank You  
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