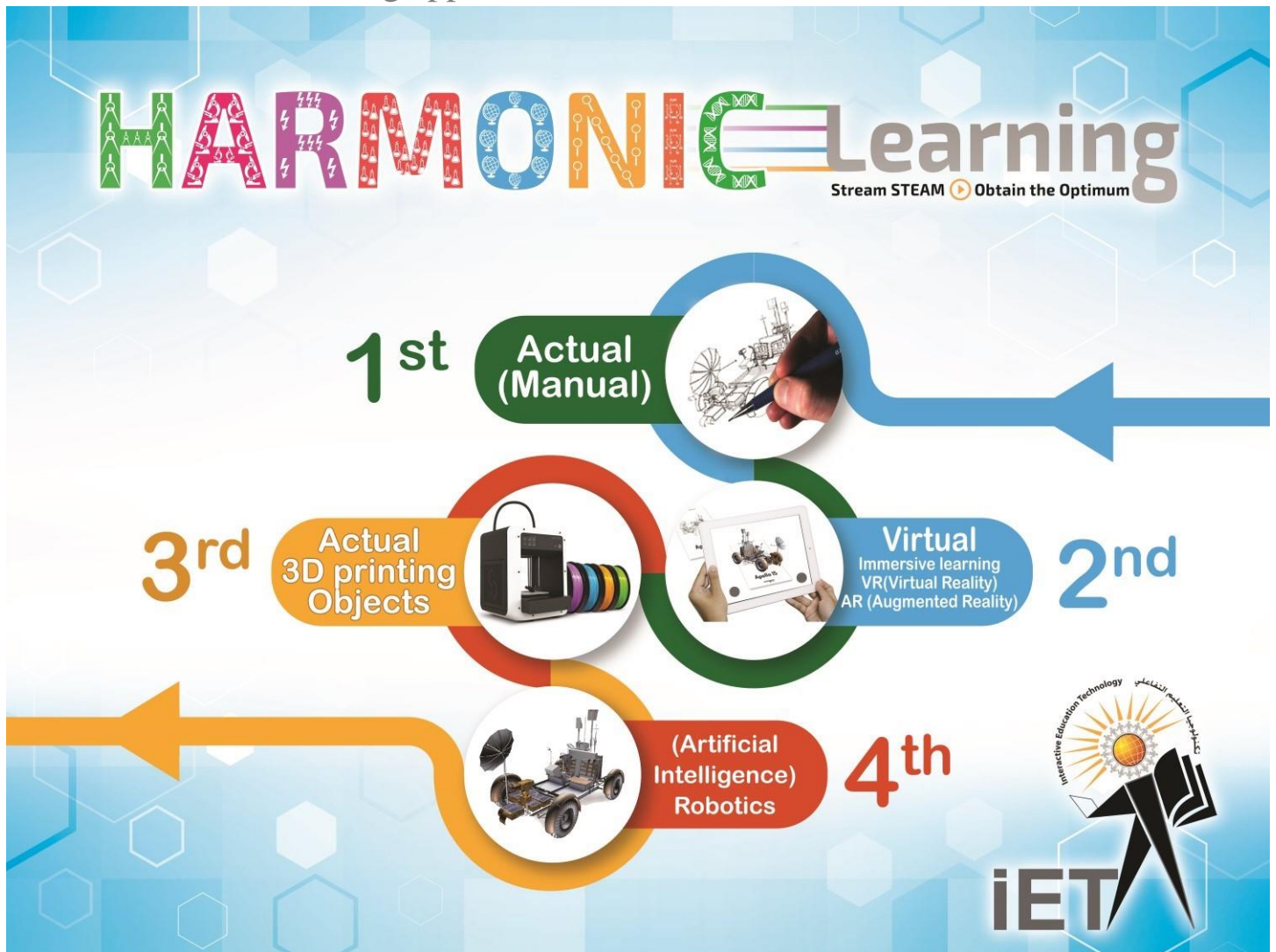


## Harmonic Classroom TTT Program

HC consists of four main tracks components:

- 1- Interactive system and HC environment tools.
- 2- Immersive Learning (VR, AR, Hologram and 4D+Resources).
- 3- Creativity apps and 3D Printer.
- 4- Robotics AI and Coding apps.



Duration: 60 Hrs

## Prerequisite

Basic skills of MS Windows and MS office

A laptop of minimum core i3, preferable touch screen with pen or tablet pro with interactive thin pen stylus (electromagnetic) min 2GB RAM.

## Learning Objectives

At the end of course trainees will get familiar and friendly use of Interactive Classroom environment tools (interactive Panel Display, Activconnect, Interactive collaboration tower, and wireless mirroring dongle, VR Glass, 3D Printers and Robots)

using **3D Printing** as a method of creation that requires only some basic computer skills and a few rules of thumb. This class will allow learner to discover for themselves the potential and limitations of 3D Printing through a build intensive design project. This course is an excellent option for anyone who ever wanted to prototype an invention, create a work of art, customize a product or create a build part ROBOT and all over applying STEAM by applied sciences subjects in product creation.

Trainees can expect to be able to do the following by the end of the course:

- Be able to think critically about public reports of 3D printing in the media
- Be able to communicate clearly what makes 3D printing unique from other traditional methods of manufacturing and what its current benefits and limitations are.
- Be able to access specific resources needed to 3D print an object; include CAD software, CAD libraries, additional CAD and printing web tutorials, and 3D printing service providers. Complete online CAD tutorials independently, at their own pace
- Assembling 3D printed objects parts for robot designed
- Coding the processor to control the tasks designed of the assembled Robot

### Robotics:

Trainees will be able to assemble and coding on three levels, each level matches curriculum mapping scopes and sequence objectives based on classes and cycles subjects

Cycles	Hrs#	Level	Robot	Programming Language
Primary	10	Beginner	Neuron	Blocks
Intermediate	10	Advanced	Mbot	Scratch
Secondary	20	Professional	Arduino	C++
Total	40			

## Intended Trainees Audience

It will be useful to trainees based on a multi-disciplinary product design team from different learning subjects and objectives integrated together by applying STEAM .

## Class Reference Materials

- Internet Resources ○ Required:
- PDFs of in-class exercises
- Autodesk Fusion360 Homepage: <http://fusion360.autodesk.com>

Recommended Further

Resources, Free CAD Libraries:

- Autodesk 123D Gallery: <http://www.123dapp.com/Gallery/content/all>
- SketchUp Gallery: <https://3dwarehouse.sketchup.com/>
- SolidWorks Gallery: <http://www.3dcontentcentral.com/default.aspx>
- 3D Anatomy Models: <http://lifesciencedb.jp/bp3d/?lng=en>
- Thingiverse by MakerBot: <http://www.thingiverse.com/>
- Youmagine: <https://www.youmagine.com/designs>
- Rapid Prototyping Journal (ISSN 1355-2546)
- International Journal of Rapid Manufacturing (ISSN 1757-8817)
  
- Vobox Software and library
  
- Xyz software to print and create

## Course Policies and Expectations

- Laptops will be required or Tablets pro
- Everyone learns at a different speed. While everyone will be completing the same tutorials during the work sessions, not everyone will complete them in the same time. To be considerate of your classmates if you complete the work early.
- The class will discuss the tutorial at the end of class time
- Feedback will help set the pace of the class and make sure everyone is learning.

## Assignments & Grading

A Team project must be introduced by Learners to proof competences acquirement

### Class Schedule

A minimum of 3 Hrs per session per day is required

### Number of Attendees

A maximum of 16 trainees per group