

IO2: The STEAM Plus Module

STEAM is by nature an interdisciplinary and informal working order. Therefore, the module has a three-layer (school term/week/hour) structure and this structure allows the module to serve the same purpose with a different time management system in different countries. The activities that will make up the module are designed as a two-level structure. The first level of the module is for STEAM beneficiaries (as adult learners).

LEVEL 1:

This stage is planned as a school term / 16 weeks / 88 hours. This stage consists of four levels (A1, A2, B1, B2).

STAGE 2: SPECIALIZING IN STEAM; Persons who successfully complete the B1 and B2 levels that make up Stage 1, reach the level of detailed knowledge and skill related to the field they want (Science, Technology, Engineering, Art, Mathematics) from the disciplines that make up STEAM.

B1: Development (2 weeks / 8 hours)

At this stage, individuals will choose a letter they want to specialize in on STEAM and begin to receive content training about that letter.

B2: Specialization (2 weeks / 8 hours)

People who successfully complete the previous level gain this level of expertise by making high-level applications for the letter they want.

Note: The rows in the tables that will be prepared weekly can be reproduced within the framework of the trainings you suggest. Please pay attention that the training content to be given is compatible with the total hours specified in the project.

A LEVEL

Level Curriculum		A1 – Foundation Level				
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)	
1	6	Fundamental principles in science, technology, engineering, the arts, and mathematics	Engineering	Rube Goldberg device	3	A1.01
			Mathematics	Geometry and arts	3	A1.02
2	6	An overview of problem-solving approaches	Mathematics	Puzzles	3	A1.03
			Technology	Plastic waste	3	A1.04
3	6	An overview of problem-solving approaches	Science	Mind-mapping	3	A1.05
		Creative expression through art and design	Art	Geometry and painting	3	A1.06
4	6	Creative expression through art and design	Engineering	Home modeling	3	A1.07
			Art	Sculpturing	3	A1.08
5	6	Fundamental programming concepts, such as block-based and text-based programming	Technology	Game design	3	A1.09
			Mathematics	Mathematics and Coding	3	A1.10
6	6	Basic robotics ideas and the construction of rudimentary machines	Engineering	Lego robots	3	A1.11
			Science	Catapult creation	3	A1.12
6 Week Total Hour					36	

Level Curriculum		A2 - Intermediate STEAM skills, capacity building				
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (Hours)	
1	6	Expanding on basic concepts and abilities	Science	Chain Reaction Challenge	3	A2.01
			Art	Interactive Art Gallery Exhibition	3	A2.02
2	6	Intermediate problem-solving strategies	Science	Escape Room Puzzle Challenge	3	A2.03
			Technology	Reverse Engineering Task	3	A2.04
3	6	An overview of electronics and circuits	Engineering	Electronic Circuit Design	3	A2.05
			Art	DIY Musical Instrument	3	A2.06
4	6	Prototyping and design thinking	Engineering	Paper Prototyping Challenge	3	A2.07
			Engineering	Innovative Product Redesign	3	A2.08
5	6	Languages and principles for intermediate programming	Technology	Interactive Storytelling with Coding	3	A2.09
			Mathematics	Algorithm design	3	A2.10
6	6	Creating more sophisticated machines and robots	Technology	Robotic Arm Design and Assembly	3	A2.11
			Engineering	Automated Vehicle Challenge	3	A2.12
6 Week Total Hour					36	

B LEVEL: Technology

Level Curriculum		B1 - Development					
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)		
1	4	Introduction to 3D visualisation	Technology	Introduction to 3D Visualisation with Tinkercad	4	B1.01	
2	4	Exploring complex 3D visualisation	Technology	Exploring 3D Visualization with GeoGebra 3D	4	B1.02	
2 Week /Total Hour					8		

Level Curriculum		B2 - Specialization					
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)		
1	4	Introduction to Designing Functional Prototypes	Technology	Introduction to Designing Functional Prototypes	4	B2.01	
2	4	Printing Workshop and Showcase	Technology	Printing Workshop and Showcase	4	B2.02	
2 Week /Total Hour					8		

LEVEL 2:

For STEAM Instructor level. This level is planned as half teaching period / 8 weeks / 32 hours. This level also consists of four stages (C1, C2, D1, D2).

The levels and stages are planned in detail as follows:

C1: Problem Solving (2 weeks / 8 hours)

C2: Project Planning (2 weeks / 8 hours)

D1: Coaching (2 weeks / 8 hours)

D2: Mentoring (2 weeks / 8 hours)

STAGE 1: PROJECT CYCLE MANAGEMENT: At this level, individuals will be able to develop projects by taking design, budgeting, reporting and evaluation training under the headings.

Problem solving and project planning.

STAGE 2: LEADERSHIP: Candidates who have successfully completed all previous phases will learn how to teach STEAM as STEAM volunteers. Since STEAM training is a process that requires both coaching and mentoring, the module will contribute to the emergence of volunteer leaders through these two concepts.

C LEVEL

Level Curriculum		C1 - Problem Solving				
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)	
1	4	Problem solving challenge	Science	Smart Agriculture for Food Security	4	C1.01
2	4	Innovative Solutions Hackathon	Science	Reducing Plastic Waste in Communities	4	C1.02
2 Week Total Hour					8	

Level Curriculum		C2 - Project Planning				
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)	
1	3	Strategic Project simulation	Science	Health Clinic Expansion	3	C2.01
2	3	Budgeting and Resource Allocation Workshop	Technology	Education programme Implementation	3	C2.02
3	2	Effective Communication and Collaboration	Technology	Sustainable Urban Planning	2	C2.03
2 Week Total Hour					8	

D LEVEL

Level Curriculum		D1- Coaching				
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)	
1	5	Interactive Learning Facilitation	all	STEAM Inquiry Clinics	2	D1.01
			all	STEAM Challenge Showdown	3	D1.02
2	3	Adaptive learning strategies	all	STEAM Learning Profiles	3	D1.03
2 Week/Total Hour					8	

Level Curriculum		D2 - Mentoring				
Week	Hour	Workshop Title	STEAM Category	Content Title	Lecture Duration (hours)	
1	4	Guided Mentorship Project	all/Mathematics	STEAM Career Exploration	4	D2.01
2	4	Mentorship Showcase and Reflection	all/Technology	Technology for Social Change	4	D2.02
2 Week Total Hour					8	