TOT Program

Course Syllabus

Course Title: **SPIKE PRIME Robotics – Python coding**

Prerequisites: **Basics of python and spike prime block-based environment**

Credit hours: **12**

Target audience: **Trainers and Teachers**

Course Description:

This is a TOT course meant for trainers who are interested in teaching and training the cutting-edge LEGO Robotics platform (SPIKE PRIME) which is the substitute for the EV3 platform. Trainees are going to step up their coding skills by getting specialized hands-on training based on python language to program spike robots. Starting from the design issues such as (building-pieces uses, movement systems, structuring robots' bases ...etc.), passing by the electronic components and their uses, coding skills, and not ending with a lot of implementations and practical applications.

The Content	Duration (hour)
Subject 1: The work space & technical Jargon • Module • Routine • Coroutine • Coding mechanisms **Subject 2: Static import** • Mechanisms • Troubleshooting import issues • Hierarchal structure of modules and methods **Subject 3: Utilizing The Hub** • Modules, submodules, and methods in use • Conditional statements in action • Implementations **Subject 4: Straight movement** • Modules, submodules, and methods in use • Synchronous(p) commands vs Asynchronous(a) commands • Asynchronous commands – stategy1 • Asynchronous commands – stategy2 • Implementations **Subject 5: Rotation around the z-axis** • Motion (gyro) sensor • Configuration & Yaw angle measurements • Modules, submodules, and methods in use • Constant Motor-speed technique • Implementations **Subject 6: Sensors operation** • The force sensor • The distance sensor • The color sensor • Modules, submodules, and methods in use • Implementations	**12**

Course Requirements:

1. Laptop
2. Spike Prime robotics core Kit