TOT Program

Course Syllabus

Course Title: **SPIKE PRIME Robotics - 102**

Prerequisites: **Basics of SPIKE PRIME Robotics**

Credit hours: **14**

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 get specialized hands-on training based on the educational policy "STEM". Advanced design issues are such as (gears, motion transmission, lifts, ...etc.) going to be delivered, as well as, trainers are going to assimilate sophisticated programming skills and concepts, all forehead mentioned will be wrapped up with a lot of implementations and practical applications.

The Content	Duration (hour)
Design Approach **Subject 1: Review** **Subject 2: Robot design III** • Interior and exterior structures • Arms and lifts • Weight distribution and similarity • Wheel-effect • Implementations **Subject 3: Gearing Systems - Advanced** • Mechanisms and principles • Types and uses • Gear ratio • Implementations **Subject 4: Motion Transmission - Advanced** • Mechanisms and principles • Implementations **Subject 5: Arm Design - Advanced** • Mechanisms and principles • Implementations	7
Programming Approach **Subject 1: Review** **Subject 2: Utilizing Variables** • The principle of variables in coding • Blocks in use • Implementations **Subject 3: Arrays** • The programming concept • Blocks in use • Implementations	7

Subject 4: Introduction to Control Engineering • Traditional control • P,I, and D controllers • Implementations **Subject 5: Advanced Applications** • Line follower • The Zero-degree Follower • Storing and fetching data • Employing mathematical Probability **Subject 6: Problem-Diagnosis Procedure**	

Course Requirements:

1. Laptop
2. Spike prime robotics core and extension kits