PUTTING THE FUN BACK INTO LEARNING!

Robotics Curriculum Guide

December 2016

Dear parents and guardians,

Welcome to the Robotics curriculum guide for December.

RoboLAB is a yearlong robotics program aimed at implementing technology enhanced learning in classrooms. It aims to promote robotics as a tool for application of concepts learnt by students in classroom using STEM (Science, technology, Engineering and Mathematics) integration by creating multiple intelligence based learning environment. Robo LAB provides an opportunity to rediscover and redesign learning by engaging students in an inquiry based approach to collaborate and be creative in solving open ended robotic challenges.

Curriculum Content for December

Grade 4:

Session Name	Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
Play with tricycle.	Construction of a remote controlled tricycle and observe the use of gears in it.	**Science**- Identification of gears as simple machine.	Simple machine Design Build Problem solving Remote control Motor
Challenge Day	Students will apply their learning of simple machines to design and construct an innovative machine that can help them in performing a task of their choice.	**Science**- Integration of simple machines to construct a complex machine. **Mathematics**- Build new knowledge through problem solving, Apply and adapt a variety of appropriate strategies to solve problems.	

Grade 5:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
Blinking lights and Glowing lights	Programming the LED to glow for a specified time.	**Technology**-Algorithm development, sequential programming.	Design motors build

Challenge Day	Construction of an entry gate that opens after every 1 second and programming the LED to glow green when the gate is open.	**Engineering**- Reinforcement of Engineering Design Process **Mathematics**- Build new knowledge through problem solving, Apply and adapt a variety of appropriate strategies to solve problems **Technology**-Algorithm development, sequential programming.	problem solving Simple machine Programming Algorithm

Grade 6:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
Conductivity fan	Construction of a fan and programming it to rotate with different speeds depending on the conductivity of the material.	**Science**-Differentiation of conductors and insulators. **Technology**- Algorithm development, Use of conditional construct IF. **Mathematics**-Represent and analyze mathematical situations using algebraic symbols, Analyse change in various contexts (Algebra).	Design Algorithm Programming Conductors Insulator Conductivity Sensor Problem solving
Challenge Day	Construction of an autonomous car and programming it to chase the source of light.	**Engineering**- Reinforcement of Engineering design process. **Mathematics**- Apply and adapt a variety of appropriate strategies to solve problems (Problem Solving).	

Grade 7:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
Edge detector	Construction of an autonomous car that does not fall off the table.	**Science**- Reflection of light. **Technology**- Use of analog sensor (IR sensor). **Mathematics**- Represent and Analyze mathematical situations using algebraic symbols (Algebra), Apply appropriate techniques to determine measurements (Measurement), make reasonable estimates (Numbers and operations).	Design Algorithm Programming IR Sensor Algebra Measurement If statements

Challenge Day	Construction of a helper robot using any sensor learnt so far.	**Technology**- Algorithm Development, Use multiple IF statements. **Engineering**- Reinforcement of the Engineering Design Process. **Mathematics**- Build new knowledge through problem solving, Apply and adapt a variety of appropriate strategies to solve problems (Problem solving).	Problem solving

Grade 8

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
I follow the line	Construction of an autonomous car and programming it to follow a black line on the white surface.	**Science**- Reflection of light. **Technology**- Algorithm Development, Use of multiple IF statements. **Mathematics**- Represent and Analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra). Apply and adapt a variety of appropriate strategies to solve problems (Problem solving).	Design Build Problem solving Programming Algorithm Algebra Measurement Analog Sensor IF statements
Challenge Day	Construction of a helper robot using any sensor learnt so far.	**Technology**- Algorithm Development, Use multiple IF statements. **Engineering**- Reinforcement of the Engineering Design Process. **Mathematics**- Build new knowledge through problem solving, Apply and adapt a variety of appropriate strategies to solve problems (Problem solving).	

Kind regards

Miss Manal Albetar manal@albasmaschool.ae

Robotics Teacher