



PUTTING THE FUN BACK  
INTO LEARNING!

Dear Parents and guardians,

RoboLAB is a year-long 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. RoboLAB 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 Coverage for May

### Grade 4:

Topic Name	Description	Science, Technology, Engineering & Mathematical Relevance	Key Words
<b>Unusual means of transport</b>	Construction of a remote controlled ropeway and observe that pulleys are used to change the direction of pull and make it easier to lift a load.	<b>Science</b> - Identification of pulley as a simple machine. <b>Technology</b> -Relating to real world examples through technology. <b>Mathematics</b> - Build new knowledge through problem solving (Problem solving).	Robotics Simple machine Design Build Problem solving Energy Lever Motor
<b>Catapult challenge</b>	Construction of a catapult and identify the effective position of fulcrum to increase the distance an object moves.	<b>Science</b> - Identification of lever as simple machine. <b>Mathematics</b> - Build new knowledge through problem solving.	
<b>Challenge Day I</b>	Students will apply their learning to design and construct a cart.	<b>Science</b> - Use of simple machines to construct a complex machine. <b>Mathematics</b> -Apply and adapt a variety of appropriate strategies to solve problems (Problem solving).	

## Grade 5:

Topic Name	Activity Description	Science, Technology, Engineering & Mathematical Relevance	Key Words
<b>Play with tricycle.</b>	Construction of a remote controlled tricycle and observe the use of gears in it.	<b>Science</b> - Identification of gears as simple machine.	Design motors build problem solving Simple machine Programming Algorithm Gears
<b>My robotic fan</b>	Construction & programming a fan to rotate for a specified time.	<b>Technology</b> -Algorithm development, sequential programming.	
<b>How things move?</b>	Construction of a remote controlled car and exploring the steering mechanism.	<b>Technology</b> -Relating to real world examples through technology.	

**The Core Competency Focus:** Problem solving-creative-cooperative-project based learning-critical thinking

**How Can You Help?** Please could you make sure your children bring; robotics book, pen (black or blue) and pencil for all Robotics lessons and help your children to learn the meanings of the key words.

**Homework:** Students will carry out an independent research task to enable them to come up with a design solution.

**Useful Website:** Here is a useful website to help the student in robotics: [www.thinklabs.in](http://www.thinklabs.in)

## Grade 6:

Topic Name	Activity Description	Science, Technology, Engineering & Mathematical Relevance	Key Words
<b>How are cars steered?</b>	Construction of an autonomous car and programming it to take turns to follow a specified path.	<b>Technology</b> -Algorithm development, Sequential programming. <b>Mathematics</b> -Develop and demonstrate spatial sense, Specify location and describe spatial relationships using programming (Geometry).	Design Algorithm Programming Geometry Problem solving Touch sensor

<b>Conductivity fan</b>	Construction of a fan and programming it to rotate with different speeds depending on the conductivity of the material.	<b>Science</b> -Differentiation of conductors and insulators. <b>Technology</b> - Algorithm development, Use of conditional construct IF. <b>Mathematics</b> -Represent and analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra).	Conductors Insulators Conductivity Sensor
<b>Touch activated fan</b>	Construction of an automatic fan and programming it to switch on when the touch sensor is pressed.	<b>Science</b> - Conservation of energy	
<b>Challenge Day 1</b>	Construction of an autonomous car and programming it to trace a square.	<b>Engineering</b> - Exposure to Engineering Design Process. <b>Mathematics</b> -Develop and demonstrate spatial sense (Geometry). Apply and adapt a variety of appropriate strategies to solve problems (Problem solving).	

### Grade 7:

Topic Name	Activity Description	Science, Technology, Engineering & Mathematical Relevance	Key Words
<b>Touch activated fan</b>	Construction of an automatic fan and programming it to switch on when the touch sensor is pressed.	<b>Science</b> - Conservation of energy	Design Build Problem solving Programming
<b>Conductivity fan</b>	Construction of a fan and programming it to rotate with different speeds depending on the conductivity of the material.	<b>Science</b> -Differentiation of conductors and insulators. <b>Technology</b> - Algorithm development, Use of conditional construct IF. <b>Mathematics</b> -Represent and analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra).	Algorithm Sensor Conductors Insulators Algebra Degree

<b>Turns.(90 degree,30 degree, 120 degree)</b>	Construction of an autonomous car and programming it to take angular turns (90, 30and 120) using different methods.	<b>Technology</b> -Algorithm development, Sequential programming. <b>Mathematics</b> -Tracing angles (Geometry).	
<b>I respond to only sound.</b>	Constructing an autonomous car and programming it to take left turn on the sound of a clap.	<b>Science</b> -Measurement of sound. <b>Technology</b> -Algorithm development, Use of IF Else decision construct. <b>Mathematics</b> - Represent and Analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra). Understand measurable attributes of object (Measurement).	

### Grade 8:

Topic Name	Activity Description	Science, Technology, Engineering & Mathematical Relevance	Key Words
<b>Making dangerous tasks easy</b>	Construction of a remote controlled forklift.	<b>Science</b> - Identifying simple machines in a complex machine. <b>Technology</b> - Relating to real life technologies.	Design Build Problem solving Programming
<b>I respond to only sound.</b>	Constructing an autonomous car and programming it to take left turn on the sound of a clap.	<b>Science</b> -Measurement of sound. <b>Technology</b> -Algorithm development, Use of IF Else decision construct. <b>Mathematics</b> - Represent and Analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra). Understand measurable attributes of object (Measurement).	Algorithm Forward Backward Turns Tracing angles Touch Sensor Sound Sensor
<b>Turns.(90 degree,30 degree, 120 degree)</b>	Construction of an autonomous car and programming it to take angular turns (90, 30and 120) using different methods.	<b>Technology</b> -Algorithm development, Sequential programming. <b>Mathematics</b> - Tracing angles (Geometry).	

<b>Edge detector</b>	Construction of an autonomous car that does not fall off the table.	<b>Science</b> - Reflection of light. Technology- Use of analog sensor (IR sensor). <b>Mathematics</b> - Represent and Analyze mathematical situations using algebraic symbols (Algebra), Apply appropriate techniques to determine measurements (Measurement), make reasonable estimates (Numbers and operations).	
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Kind regards

Miss ManalAlbetar      [manal@albasmaschool.ae](mailto:manal@albasmaschool.ae)