SakRobotix Lab
STARTUP CENTRE, IIT BHUBANESWAR

SakRobotix Research Centre (SRC) Proposal

From,
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Startup Center, IIT Bhubaneswar
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(SUB – To create Robotics scientist by establishing state of art Robotics Lab and offering quality robotics education at your school**)**

SakRobotix Lab is one of the most exciting & fastest growing robotics product company in India based out of **IIT Bhubaneswar Startup Center**; we are into robotics Research & Education with 45 different DIY robotic learning kits, products and many more.

To make Our Country India the next robotics capital of the world, we are establishing, **SAKROBOTIX RESEARCH CENTER (SRC)** – A robotics lab to offer **STEM & Robotics** learning at your School Campus for 1stto 10thclass students.

We will invest and establish the lab in your school, deploy competitive and dedicated robotics trainers to offer quality training with 100% hands on experience.

Such physical explorations not only make the concepts more tangible but also appeal to student's diverse learning style.

SakRobotix Lab Pvt Ltd believes that you will grab this opportunity and will add fuels in our journey to make India the next robotics capital.

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Our Curriculum: -

Standard – 1:

contents	project name
Activities , 100% hands on session , Science,Technology , Engineering & Mathematics	Mini Ferrari Car
	Smoke Ring
	Egg in Bottle
	Synthetic Jelly
	Pencil Bow
	Dancing Joker
	Build a Fizz Inflator
	Invisible Ink
	Gravity Device
	Centrifugal Sprinkler
	Colour Wheel
	Magic Bank

Standard – 2:

contents	project name
Activities , 100% hands on session , Science, Technology , Engineering & Mathematics	Balloon Rocket
	Multi Boil
	Pop Gun
	Roaring Bottle
	Straw Turbine
	Chicken Sound from cup
	Color Mixer
	Dishing out the Color
	Lift an Ice cube
	Matchstick McCann
	Pin Wheel
	Water Turbine

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Standard – 3:

contents	project name
Activities , 100% hands on session , Science,Technology , Engineering & Mathematics	Spinning brush bot
	Robot car
	Propeller car
	Ant robot
	Wobblebot
	Homemade wigglebot
	Walking robot
	Ice skating robot
	Led pattern (two led)
	Letter design using led's
	Rc car
	Magic candle

Standard – 4:

contents	project name
Activities , 100% hands on session , Science,Technology , Engineering & Mathematics	Walking robot
	Robot plane
	Hopping robot
	Six legged hexapod
	Jumping hen
	Rikshaw men
	Push car
	Diy robotic walking robot
	Cute walle robot
	Wind turbine (from cardboard)
	Mini water pump
	Homemade air conditioner

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Standard – 5:

contents	project name
Introduction to robots | definition of robot| laws of robots|4-D condition |current trend |motor selection | material selection Archimedes Principle| bouncy | density of water |water as amedium | propeller Problem solving solution |Identifying the problem | Developing sustainable Application | components of the robot | Design	WaterBoat – Design & Testing
	Flap waterboat
	OCU Design & Control
	Design of Basic Underwater robot
	Assembly & Testing of Underwater Robot
	Underwater Dark Explorer
	Garbage Collector Robotz
	Obstacle Avoidance Overwater Robot
	Wireless WaterBoat Control
	Underwater Hurdle
	Underwater Pick & Drop Robot
	Amphibious Robot

Standard – 6:

contents	Project Name
Introduction to robots | definition of robot| laws of robots |current trend | need of robots| motor selection | material selection | Light sensor module |concept creation | concept design | mechanism development | parts development|assembly of | try cycle modeling |mathematics of triangle | magnet | electric magnetism| walking robot mechanism | seed rowing mechanism| propeller | Motor working principle|obstacle | floor moping mechanism	Manual Robot
	Cake Cutting Robot
	Soccer Robot
	Floor Mopping
	Grass Cutting Robot
	EM Garbage Collection Robot
	Fire Fighting Robot
	Night Robot
	Remote Control Robot
	Intelligent Manual Robot
	Wireless Controlled Robot
	Hurdle Robot

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Standard – 7:

Content	Project Name
Mission completion robot | converting electrical energy to mechanical moments|Types of gears & its application| remotecontrol |friction |slope climbing robot |wheel selection| robots in sand |robots inunstructured arena | Gripper designing | gripper mechanism |robot playing soccer | TT ball pick and place robot |suction mechanism | Archimedes Principle| bouncy | robot war contest design innovations |Semi-autonomous robot	Operator Controlled Robot
	Slope Climbing Robot
	Self-balanced Robot
	Human Guard Robot
	Gripper Design & Assembly
	Robotic Arm
	Pick & Place Robot
	Manipulated Vacuum Cleaner
	Police robot
	Biodegradable garbage robot
	Snake Robot
	Wireless Controlled Pick & Place

Standard – 8:

Contents	Project Name
Introduction to Robotics |What is a robot| Types of robots |Applications of robotics |Current and future market scenarios |4-D condition |Control & Sensing |Wheel diameter |Wheel circumference |Gear mechanism |Math's behind RPM| Physics behind Motors | Engineering behind robots | application of technology in multi facet way | spraying pesticides Problem solving solution |Identifying the problem |components of the robot | Design | Assembly of the robot step by step approach | integration & interfacing all parts |testing | Basic Electronics components |application of electronics components.	Obstacle Avoidance Robot
	Black Line Follower Robot
	Wall Follower Robot
	Light Follower Robot
	Edge Follower Robot
	Fire Avoidance Robot
	Fire Fighting Robot
	Self-Balancing Robot
	Dual Sensor Line Follower Robot
	Remote controlled Line Follower Robot
	RF Controlled Robot
	Remote controlled Line Follower Robot

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Standard – 9:

Contents	Project Name
Programming the Robot | problem statement |Solution |Algorithm |Flowchart | Programming | coding |Arduino IDE | Arduino Uno board hardware | motor driving shield | Interfacing Sensors | interfacing motor |hardware configuration | program downloading | testing | sensor allignment| sensor calibration |Wireless communication | Rf communication | mobile android application based control|mechanical hardware assembly	Obstacle Avoidance Robot
	Single Sensor Line Follower
	Shadow Follower
	Edge follower robot
	Dual sensor Line Tracking
	Dual sensor obstacle avoidance
	DTMF Control Robot
	Checkpoint Robot
	Smart dustbin
	Colour detection robot
	Blind man Smart stick
	Chopping machine

Standard – 10:

Contents	Project Name
Advance Programming the Robot | problem statement |Solution |Algorithm |Flowchart | Programming | coding | Atmega 328 Microcontroller | Arduino hardware , motor driving shield | Interfacing Sensors | interfacing motor hardware configuration |Home automation program downloading | testing | sensor designing | sensor calibration |Wireless communication | advanced wireless communication | Bluetooth communication | Hardware assembly	Obstacle Avoidance Robot
	Path Planning Robot
	Bluetooth App control Robot
	Bluetooth Voice Control Robot
	Robotic Gripper Design/Control
	Robotic Arm Control(A to B)
	Bluetooth Robotic Pick & Place
	Intelligent Obstacle Avoidance
	Self-Balancing Robot
	Gesture Controlled Robot
	Humidity Controlled Robot
	Geometric Path Finder

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ROBOTICS LAB COMPONENTS

S No.	Robot /Component details	Quantity
1	SERA - Humanoid Robot	1
2	SHIR - Hybrid Robot	1
3	Robotics Arm	2
4	Robotics Teddy Bear	2
5	Robot DIY Kit 9.0	10
6	Robot DIY Kit 8.0	10
7	Robot DIY Kit 7.0	10
8	Robot DIY Kit 6.0	10
9	Robot Underwater DIY kit	10
10	Multi sensor kit (collection 37 different sensor)	1
11	Screw Driver Set	1
12	Touch Display Module	2
13	Audio Module	2
14	Wireless RF Module (RX & TX)	2
15	Stepper motor	4
16	BLDC motor	4
17	DC motor	4
18	Servo motor	4
19	DPDT Switch	12
20	Remote Box – 3 Switch	3
21	Codded wire bundle of 20 meter	1
22	Hammer	1
23	Hacksaw	1
24	Metal chassis	4
25	Soldering Iron with stand	4
26	Soldering Lead (50 gm)	4
27	Soldering Flux	4
28	De-soldering pump	4
29	Digital Multi meter	4
30	F – F Connector cable	40
31	M – M connector cable	40
32	F – M connector cable	40
33	Wire Strippers	4
34	Single stand wire (10 meters)	4
35	Breadboard	4

36	Assorted Resistor box	2
37	Assorted Capacitor box	2
38	DPDT relay	4
39	7805 IC	4
40	Transistor	4
41	LED box	1
42	Double sided tap	2
43	Insulating tap	2
44	Op amps	4
45	Sun board (2x1 sq. ft)	10
46	Flex Glue bottle	4
47	555 Timer IC	4
48	Buzzer	4
49	Kickboard	2

Q. How to setup this exciting Robotics laboratory at your college and start the training program?

Ans. SakRobotix Lab, Startup center, IIT Bhubaneswar & School need to sign the MOU to setup **SakRobotix Research Centre** in the schools, where schools have to allocate a dedicated room with basic infrastructure. Now we will setup the robotics lab and start the learning activity.

Q. Who will offer training?

Ans. SakRobotix will supply dedicated, qualified & experienced trainers to offer quality robotics education.

Q. What about the service & maintenance of the robots & lab equipment's?

Ans. SakRobotix will offer 100% service & maintenance support.

Q. What will the students learn out of it and what values will be added to them?

Ans. Student going through this program will develop 12 robots in a year & get explored to many more concepts of STEM (Science –Technology –Engineering –Mathematics). We will also be engaging the students to design & create new INNOVATIVE ROBOTS, so that they can aspire to become a Robotics Scientist/Innovator in future.