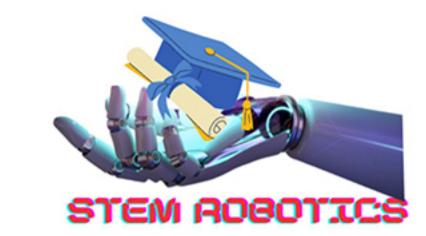


CURRICULUM

GRADE 9-12 YEAR 1

S.no	Kit/Platform Used	Concept Covered with Activity / Project Name	Activity/Project Details or Coverage	Inter-Disciplinary Learning Outcome around STEM/Maths/Science		
1	Introduction to Robots					
2		Turn on Light Using Switch	With Tinker Orbits, ignite STEM curiosity! Build a circuit, program it using block-based coding in the Tinker Orbits app/AI Connect platform, and turn on a light with the power of your code and a switch.	STEM Proficiency: Master circuitry, coding, and light control with Tinker Orbits. Scientific Exploration: Understand electrical principles through hands on experimentation. Mathematical Logic: Apply logical thinking while programming for tangible results.		
3	Tiaker Orbital	Alarm System	Tinker Orbits kit. Combine modules, employ block-based programming on the Tinker Orbits app/AI	Electronics Mastery: Integrate IR, buzzer for an alarm, emphasizing STEM. Mathematical Logic: Apply logical reasoning through block-based programming. ICT Proficiency: Utilize Tinker Orbits app for hands-on tech learning.		
4	Tinker Orbits	Automatic fan	integrating an IR sensor. Utilize block-based programming through the Tinker Orbits app/AI Connect platform for an interactive, hands-on electronics project.	Electrical Understanding: Comprehend circuits and sensors, enhancing STEM and science. Mathematical Logic: Apply math concepts in programming, promoting mathematical thinking. ICT Proficiency: Develop digital skills through block-based programming, linking ICT to electronics.		
5		Display text on OLED	Utilize Tinker Orbits kit to display text on OLED screens. Engage in block-based programming through the Tinker Orbits app/AI Connect platform, fostering STEM	Mathematical Logic: Apply logical thinking in block-based		
6	Tinker Orbits PBL	Smart Lamp	Create a Smart Lamp with the Tinker Orbits PBL kit. Assemble MDF pieces, adding ultrasonic sensor for hand wave activation and a potentiometer to control	Electrical Mastery: Craft Smart Lamp, blending STEM, Math, and electronics. Scientific Principles: Understand sensors, linking Science to technology. Mathematical Control: Apply potentiometer for color adjustment, reinforcing math concepts.		
7	THIRCT OF DIEST DE	Automatic Pet Feeder	PBL Kit. Assemble MDF pieces to create the structure. The robot uses an ultrasonic sensor to detect the pet's presence and servo motors to dispense food into the	Engineering & Robotics: Create an Automatic Pet Feeder with precision. Scientific Observation: Explore ultrasonic sensor functionality for pet interaction. Mathematical Logic: Program precise food dispensing, linking math and automation.		
8			Quiz: Tinker Orbits			
9			Project - 1: Theme- Sustainable Cities and Commun	nities (UN Goal -11)		
10		Obstacle Avoider Robot	robot designed to navigate its environment while	STEM Proficiency: Construct obstacle avoider robot, merging science, technology, engineering. Mathematical Logic: Apply math to sensor data for navigation decisions. Technological Adaptation: Integrate ICT with sensor-driven obstacle avoidance strategies.		
11	STEMBOT	Light Follower Robot	dependent resistors (LDRs), to detect the intensity of light in its surroundings. The Microbit, a	Science Integration: Explore light behavior through phototransistors and LDRs. Mathematical Logic: Apply math in programming for precise light tracking. ICT Proficiency: Utilize Microbit for sensor data processing and robot control.		





Scientific Insight: Understand structural stability and material science

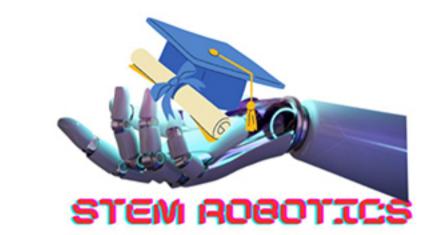
concepts.

CURRICULUM

GRADE 9-12 VEAR 1

S.no	Kit/Platform Used	Concept Covered with Activity / Project Name	Activity/Project Details or Coverage	Inter-Disciplinary Learning Outcome around STEM/Maths/Science	
12	STEMBOT	Voice control robot	advanced robot that responds to voice commands and performs tasks based machine learning. The AI and ML components enable the robot to understand and	Scientific Application: Understand AI and ML principles for voice recognition. Mathematical Logic: Implement data analysis, reinforcing math in	
13			Quiz: MicroBit		
14	Project - 2: Theme Good Health and Well-being (UN Goal -3)				
15	Basic Electronics Kit	Automatic Street Light	Create an Automatic Street Light with a breadboard kit and Light Dependent Resistor (LDR). Understand LDR's light-sensitive behavior without coding, illuminating the streetlight when it gets dark.		
		Make your own battery	Engage in hands-on learning with the Breadboard Kit. Build a homemade battery using capacitors, exploring electrical concepts without coding, fostering a deeper understanding of energy storage.	Electrical Mastery: Create capacitive homemade battery, reinforcing STEM principles. Mathematical Application: Calculate energy storage, linking math to real-world circuits. Scientific Exploration: Understand energy dynamics, promoting science through hands-on experiments.	
17		Security alarm system	and lasers with a breadboard kit. Students connect components to design a simple yet effective alarm without coding, enhancing understanding of electronics and security concepts.	Electronics Expertise: Understand component connections, boosting STEM knowledge. Scientific Understanding: Explore light properties, connecting science to practical applications. Mathematical Logic: Apply logical thinking in circuit design, reinforcing math skills.	
18			Quiz: Breadboard		
19	Arduino Robotics Kit	Car Parking System	Create a Car Parking Sensor with an Ultrasonic Sensor and buzzer using the Arduino Robotics Kit. Learn about distance measurement, alert systems, and sensor	Distance Measurement: Apply math and science to calculate distance accurately. Alert Systems: Understand technology for creating real-world warning systems. Sensor Technology: Grasp sensor functionality and applications in robotics.	
20		Servo Motor Control	Learn servo motor control with the Arduino Robotics Kit. Assemble and program a robotic arm to perform precise movements, exploring robotics, electronics, and programming concepts in a hands-on project.	Robotics Proficiency: Craft and code robotic arm, bridging STEM and technology. Electronic Control: Understand servo motors, linking math to precise movements. Programming Skills: Code logic, nurturing computational thinking through Arduino Robotics Kit.	
21		Color Sorter (Black & White)	Sort White and Black articles by sensing through IR sensor and using a servo to segrate them	Color Recognition: Understand optics, linking science and technology concepts. Algorithmic Logic: Develop coding skills for sorting, integrating mathematics and programming. Sensor Integration: Explore sensor applications, bridging STEM disciplines seamlessly.	
22		Message display on LCD	With the Arduino Robotics Kit, students create a message display on an LCD screen, learning coding, electronics, and robotics. Engage in hands-on STEM exploration.	Coding Proficiency: Learn programming logic for message display, enhancing STEM skills. Electronics Mastery: Understand circuitry, linking science and technology concepts. Robotics Foundation: Explore robotic interactions, integrating math i problem-solving.	
23			Quiz: Arduino		
24		1	Project - 3: Theme-Responsible Consumption and Pro	duction (UN Goal -12)	
25	3D Printer	Make Hollow/ Shell Objects	Design a hollow box using TinkerCAD	STEM Integration: Apply geometry principles to design 3D hollow structures. Mathematical Skills: Calculate dimensions, volumes, and proportions for precise designs. Scientific Insight: Understand structural stability and material science.	





CURRICULUM

GRADE 9-12 YEAR 1

S.no	Kit/Platform Used	Concept Covered with Activity / Project Name	Activity/Project Details or Coverage	Inter-Disciplinary Learning Outcome around STEM/Maths/Science	
26	3D Printer	Turn 2D Object into 3D Object	Design a Batman logo and various other keychain designs	Mathematical Transformation: Apply 2D to 3D conversion through geometry. Engineering Design Skills: Craft intricate 3D models, enhancing creativity. Science of Materials: Understand materials in crafting personalized keychains.	
27			Quiz: 3D Printer		
28		Introduction to Python and AI Connect Geometrical Shape and Pattern	Explore AI Connect for fun coding adventures	Cross-Disciplinary Skills: Fosters problem-solving skills connecting STEM, Math, and AI. Algorithmic Thinking: Introduces coding concepts bridging Science and Mathematics. Real-world AI Insights: Encourages AI exploration with mathematical foundations.	
29	Python Programming (AI- Connect)	Multi-line Print Statement	Code with block based python to print a statement and learn about different data types in python	Math Skills Integration: Apply math concepts in data types, enhancing numeracy. Scientific Awareness: Explore AI's data handling, connecting to scientific data. STEM Literacy: Build foundational STEM knowledge through AI-powered activities.	
30		Design calculator	Program to create a calculator using python programming	Math Proficiency: Enhance mathematical skills through calculator design with AI. Scientific Understanding: Learn AI's role in computation and problemsolving. STEM Integration: Explore the intersection of math, science, and technology.	
31	Quiz: Al Connect				
32	Project -4: Industry, Innovation and Infrastructure (UN Goal -9)				