

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	2	Car launcher	Early Simple Machine	1. Students will learn about forces and motion, including how energy can be transferred to propel the car forward. 2. Understanding how varying the force applied to the launcher affects the speed and distance the car travels.
		Raft	Early Simple Machine	1. Students will explore why some objects float and others sink, and how the design of a raft affects its buoyancy. 2. Introduction to the principles of designing and building a structure that can float and hold weight.
September	2	Measuring car	Early Simple Machine	1. Students will learn to measure length and distance using standard units 2. Enhancing fine motor skills through the assembly and manipulation of the car.
		My Senses	Hands-on Science	1. Students will be able to name and identify the five senses: sight, hearing, taste, touch, and smell. 2. Students will understand and describe the basic function of each sense.
October	4	Bridge to cross the river	Early Simple Machine	Encourage students to think critically about how to construct a stable bridge that can hold a certain weight or span a specific distance.
		Pet dog	Early Simple Machine	Recognize and describe the physical characteristics of gorillas, such as their size, fur, and physical strength.
		Making Fan	Early Simple Machine	1. Learn about the main parts of a helicopter, such as rotors, tail, cockpit, and skids. 2. Learn about the various roles of helicopters, such as rescue missions, medical transport, firefighting, and news reporting.
		Our body	Hands-on Science	1. Students will be able to name and point to major body parts such as the head, arms, legs, eyes etc. 2. Students will understand and describe the basic functions of these body parts.
		Player	Early Simple Machine	1. Learn about simple machines such as levers and how they can be used to create movement. 2. Understand the concept of force and motion through hands-on experience.

November	3	Introduction to Coding and Jr Scratch	Jr Scratch	Students will learn to navigate the Scratch Jr interface, identifying key components like the stage, blocks palette, and characters.
		Motion block	Jr Scratch	1. Students will learn to create a simple animation. 2. Encouraging creativity in how they choose to make their character dance and in designing the backdrop.
December	3	Dance Party	Jr Scratch	1. Learning how different coding blocks affect the movements and actions of the characters. 2. Working together to create a group dance party scene, promoting teamwork and collaborative skills.
		Under the sea	Jr Scratch	Using imaginative skills to create stories about life under the sea, enhancing narrative abilities and language skills.
		Mixing with water	Hands-on Science	Students will be able to define mixing and describe how substances interact with water to form mixtures.
January	4	Outer space	Jr Scratch	1. Gaining basic knowledge about outer space, planets, stars, and the solar system. 2. Developing logical skills as they figure out how to create specific movements or scenarios in their space project.
		Animal House	Jr Scratch	1. Students will learn about different animals and their natural habitats, such as forests, oceans, deserts, and jungles. 2. Enhancing storytelling abilities by creating a sequence of events or stories involving the animals in their habitats.
		Theme based class	Jr Scratch	Develop computational and critical thinking skills
		Force	Hands-on Science	1. Students will be able to identify air as a substance that surrounds us and can move things. 2. Students will learn basic terms like "air," "wind," "blow," and "move."
Feburary	3	Fruits and vegetables	Hands-on Science	1. Students will be able to identify and name common fruits and vegetables. 2. Students will recognize and categorize fruits and vegetables based on their color and shape.
		World of shapes	Hands-on Science	1. Students will be able to identify and name basic shapes such as circle, square etc. 2. Students will recognize and find examples of these shapes in their surroundings and in everyday objects.
		Revision		

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	3	Swing	Early Simple Machine	Students will learn about the mechanics of a swing, particularly focusing on the principles of levers and pivots, which are fundamental elements of simple machines.
		Ice Hockey Player	Early Simple Machine	Students will engage in problem-solving as they figure out how to construct the model correctly and make it function as intended.
		Dogbot	Early Simple Machine	Students will gain a basic understanding of what robotics is and how simple machines can be used to build robotic models.
September	2	The Goalkeeper	Early Simple Machine(Robotics)	Students can be encouraged to customize their goalkeeper, promoting creativity and imagination.
		Water Cycle	Hands-on Science	Students will be able to define the water cycle and describe its continuous process of water movement through the Earth's atmosphere, surface, and underground.
October	4	Musical Instruments	Jr Scratch	Students will understand fundamental concepts of programming such as sequences and event handling by creating a Scratch project that plays music when certain actions are triggered.
		Play with the ball	Jr Scratch	Students will learn basic principles of animation and motion by programming characters (sprites) to dance and move on the screen.
		Animated card	Jr Scratch	This project encourages creativity in design, as students can customize their card with different backgrounds, characters (sprites), and animations.

		Water filtration	Hands-on Science	Students will be able to define water filtration and explain its purpose in removing impurities and contaminants from water.
November	3	Haunted house	Jr Scratch	By programming interactions (like a frog appear when a tree is clicked, students learn about cause and effect in a digital environment.
		Look both ways	Jr Scratch	Designing the street, characters, and vehicles allows students to express themselves creatively.
		Race to the Finish	Jr Scratch	Students will learn fundamental programming concepts such as loops, motion commands, and event handling by coding characters to move along a track.
December	3	Show and hide	Jr Scratch	1. Students will learn how to use the "show" and "hide" commands in Scratch. 2. Students can create interactive stories or games where characters appear and disappear.
		Gymnast Penguin	Jr Scratch	1. Students will learn how to animate a character (the cat) to perform gymnastic movements. 2. Students will learn the basics of frame-based animation.
		Luminus and non luminus objects	Hands-on Science	Students will be able to differentiate between objects that emit their own light and those that do not.
January	4	Introduction to paper circuit	Paper Circuit	They will gain hands-on experience in creating simple circuits using conductive materials like copper tape, batteries, and LEDs.
		Hanging a Bulb	Paper Circuit	1. Students will learn about fundamental concepts such as circuits, current, and conductive materials. 2. Encourage creativity in designing their paper circuit layouts and in deciding where and how to place the LED bulb.

		Shining Star	Paper Circuit	Students will learn to troubleshoot their circuit designs, understanding why a circuit might not function (e.g., broken connections, incorrect layout) and how to rectify these issues.
		Magnetic and non magnetic materials	Hands-on Science	Learn that not all materials are attracted by magnets, distinguishing between magnetic and non-magnetic substances.
Feburary	3	Glowing Heart	Paper Circuit	Students will gain an understanding of elementary electrical principles, such as how circuits work and the role of components like LEDs and batteries.
		Blushing Girl	Paper Circuit	The activity demonstrates how art and science can be combined creatively. Students apply artistic skills to design the blushing girl, integrating the LED as part of the artwork.
		Type of rock and it's monuments	Hands-on Science	Through activities and discussions, students will enhance their observational skills by examining different rock samples and possibly pictures or models of monuments.

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	3	Algorithm and Flowchart	Scratch	1. Students will learn what an algorithm is – a set of instructions or steps to complete a task. 2. They will understand that algorithms are used in everyday life and in programming.
		Scratch Introduction	Scratch	1. Students will learn to navigate the Scratch interface, including locating and using different blocks, the stage, the sprite list, and the coding area. 2. Students will show improved logical thinking by sequencing code blocks to achieve desired outcomes and troubleshooting errors in their scripts.
		Sink and Float	Hands-on Science	Students learn to analyze why certain objects float or sink, leading to discussions about material properties like air, metal, wood, and plastic.
September	2	Costume	Scratch	Students will be able to explain what costumes are in Scratch and how they can change the appearance of sprites.
		Create your own character	Scratch	Students will become familiar with the tools and features of the Scratch art editor for creating and editing characters.
October	3	Animation in scratch	Scratch	1. Students will learn the basic principles of animation, including frame-by-frame animation and motion. 2. Students will become familiar with the Scratch interface, focusing on tools and features relevant to creating animations.
		Final Project	Scratch	Students will demonstrate creativity by designing and drawing their own character within Scratch. This fosters imagination and artistic skills.
		Properties of matter	Hands-on Science	Students will be able to define and describe the basic properties of matter, including physical properties (e.g., color, density, mass, volume) and chemical properties (e.g., reactivity, flammability).
November	3	Importance of machine	MechanzO	1. Students will understand that force (push or pull) can change the speed or direction of an object's motion and can start or stop it. 2. Students will learn to identify examples of push and pull forces in various contexts and everyday situations.
		Mechanzo	MechanzO	1. Understanding how different parts come together to form a stable structure. 2. Working together in groups to complete the project, fostering teamwork and collaborative skills.
		First Aid	Hands-on Science	Students will be able to define first aid and understand its importance in providing immediate care to individuals who are injured or ill.
December	3	First simple machine ramp	MechanzO	Students will learn how the angle of a ramp affects the speed and distance an object travels due to gravity.
		First simple machine ramp	MechanzO	1. Students will learn about the wheel as a simple machine and its importance in everyday life. 2. Engaging in creative thinking to solve problems using wheels.
		Projects	MechanzO	Enhance critical thinking and problem-solving abilities by figuring out how to place the box without tipping the shoe rack.

January	4	Jodo Straw	Jodo straw	Students will identify and understand different geometric shapes such as circles, squares, triangles, rectangles, and more complex polygons.
		lines and angles	Jodo straw	Students will develop a clear understanding of basic lines and angles, including horizontal, vertical, parallel, perpendicular lines, and various types of angles (acute, obtuse, right).
		Patterns and Design	Jodo straw	The activity encourages creative thinking as students design their own patterns, encouraging them to experiment with colors, shapes, and arrangements.
		Poonam’s Day out	Hands-on Science	Students will learn that the Earth rotates on its axis and that this rotation is responsible for day and night.
Feburary	3	Polygons	Jodo straw	1. Students will learn to define and identify polygons, understanding that a polygon is a closed shape with straight lines. 2. Students will be able to recognize and name various polygons such as triangles, quadrilaterals, pentagons, hexagons, etc.
		Combination of 3d shape	Jodo straw	1. Students will be able to recognize and name common 3D shapes such as cubes, spheres, cylinders, cones, pyramids, and prisms. 2. Students will understand the difference between two-dimensional (flat) shapes and three-dimensional (solid) shapes.
		Final Project	Jodo straw	Students will use geometric shapes and measurement skills to design and construct their towers, integrating math into a practical context.

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	2	LED Blinking	A-BLox	1. Understand the concept of polarity in LEDs and learn how to correctly connect the anode (+) and cathode (-) to the power source. 2. Learn why a resistor is used in an LED circuit and how it protects the LED by controlling the current flow.
		Evaporation	Hands-on Science	Students will be able to define evaporation and explain how it involves the transformation of liquid water into water vapor through the absorption of heat energy.
September	2	LED Chaser	A-BLox	Students will develop a deeper understanding of electronic circuits by arranging multiple LEDs in a specific sequence, enhancing their knowledge from the basic single LED circuit.
		Display Name on LCD	A-BLox	1. Students will understand what an LCD (Liquid Crystal Display) is and how it is used in various electronic devices. 2. Gain hands-on experience in integrating an LCD with a microcontroller (like Arduino) and understand the wiring and connections involved.
October	3	Wheel & Axle	Robotics	Students will comprehend the fundamental concept of a wheel and axle, recognizing it as a simple machine that reduces friction and makes movement easier.
		Inclined Plane	Robotics	1. Students will understand what an inclined plane is and how it is used as a simple machine to make work easier by allowing objects to be moved vertically with less effort. 2. Identify and describe examples of inclined planes in everyday life, such as ramps, slides, and staircases.

October	3	Pulley	Robotics	1. Students will comprehend the basic mechanism of a pulley and how it is used as a simple machine to change the direction of force and lift heavy objects with less effort. 2. Engage in hands-on activities to construct simple pulley systems, enhancing their understanding of the practical uses and functionality.
		Formation of day and night	Hands-on Science	Students will be able to explain how the Earth's rotation on its axis causes the cycle of day and night.
November	3	Hitter Bot	Robotics	Students will gain an understanding of how an electric motor operates, including the fundamental mechanics behind rotational motion.
		Project	Robotics	Develop problem-solving skills by experimenting with different methods to change motor direction and applying these methods in various contexts or simple projects.
		Adaptions of food	Hands-on Science	Students will gain knowledge about how different organisms adapt their feeding habits and diets to survive in their specific environments.
December	3	AI and ML	Artificial Intelligence	Students will understand that AI refers to machines performing tasks that typically require human intelligence, while ML is a subset of AI where machines learn from data.
		Machine Learning software	Artificial Intelligence	Gain hands-on coding experiences using kid-friendly programming environments or tools designed for teaching machine learning concepts
		Seed Germination	Hands-on Science	Students will learn the foundational concept of how plants grow from seeds, understanding the different stages of a plant's life cycle starting with germination.
		Natural Language Processing	Artificial Intelligence	1. Students will understand the basic principles behind speech recognition and how machines interpret human language. 2. Learn the process of training ML models with large datasets of spoken audio matched to text.

January	4	Inetrfacng NLP with action blocks	Artificial Intelligence	1. Students will learn how to integrate voice recognition libraries or APIs into programming environments. 2. Students will understand how to capture and process voice input in real-time.
		Pen extension with NLP	Artificial Intelligence	1. Students will understand how speech is converted into text through the use of algorithms and natural language processing (NLP). 2. Understand the technical aspects of connecting the pen's input with speech recognition APIs or libraries.
		Types of forces	Hands-on Science	1. Gain knowledge about different types of forces such as gravitational force, frictional force, magnetic force, and applied force. 2. Develop skills to identify and explain examples of different forces in their daily life and environment.
Feburary	3	Final Project	Artificial Intelligence	Practice effective communication through discussing ideas, sharing progress updates, and providing feedback to peers.
		Revision		
		Wind energy	Hands-on Science	Understand that wind energy is renewable and can be used to generate electricity without depleting natural resources.

Month	Number of Sessions	Name of Activity	Subject	Extra Activities
August	2	Led pattern	A-BLox	1. Understand sequential logic as they program the LEDs to light up in a specific order. 2. Students will learn about microcontroller programming and how these devices can control electronic components.
		Pollination	Hands-on Science	Students will be able to define pollination and explain the basic process, including the transfer of pollen from the male part (anther) to the female part (stigma) of a flower.
September	2	RGB Led	A-BLox	Students will learn about RGB (Red, Green, Blue) LEDs and how they can mix different colors by varying the intensity of each color component.
		Led Strip	A-BLox	1. Understand the basics of color theory and how primary colors can be mixed to create a wide range of colors. 2. Learn about sequential logic and timing in programming, essential for controlling the blink rate and color change of the LED.
October	3	Dot matrix	A-BLox	Students will learn about dot matrix displays, their structure, and how they function to create patterns and images.
		Digestive System Quiz	Hands-on Science	Students should be able to name and locate key parts of the digestive system, including the mouth, esophagus, stomach, small and large intestines, liver, pancreas, and gallbladder.
		Gripper	Robotics	Students will learn about the basic principles of simple machines, focusing on how levers and fulcrums work in the context of a gripper.
November	3	Car Bot	Robotics	Students will learn about the basic mechanics of a car, including how different components like wheels, axles, and gears work together.
		Package Mover Bot	Robotics	Learn fundamental engineering concepts involved in designing and building a robot that can move packages, including structure, balance, and functionality.

		Vertebrates & Invertebrates	Hands-on Science	Students will be able to identify and differentiate between vertebrates and invertebrates based on their characteristics
December	3	Golf Bot	Robotics	Encourage creative solutions and innovative designs to improve the bot's efficiency and adaptability to different golf courses or challenges.
		Final Projects	Robotics	Solve challenges related to the bot's design and functionality, such as adjusting its power, accuracy, and adaptability.
		Respiratory system	Hands-on Science	Students will learn about the primary function of the respiratory system, which is to supply the body with oxygen and dispose of carbon dioxide.
January	4	Codelab software	AI	Students will learn the syntax and structure of a specific programming language (e.g., Python, JavaScript) used in the Codelab.
		Vision Training Blocks	AI	Students will understand to read video at runtime through vision training blocks
		Data Training	AI	Students will understand how to train model on the training dataset using machine learning model
		Water Filter	Hands-on Science	Students will understand how filtration works to remove impurities from water, including the concept of physical barriers and absorption.
Feburary	3	Chatbot 1	AI	Students will learn to create chatbot with training data
		Chatbot 2	AI	Incorporate feedback from model performance to continuously improve the quality of text training.
		Final Prject	AI	Practice effective communication through discussing ideas, sharing progress updates, and providing feedback to peers.

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August	2	4WD Car	Robotics	1. Grasp the fundamental principles of four-wheel drive systems, including traction, force distribution, and torque. 2. Develop the ability to test hypotheses and make adjustments based on observations.
		My Measuring Kit	Hands-on Science	Students will develop skills in accurate measurement, understand the use of various measuring tools, enhance precision and attention to detail, and learn to record and interpret data effectively. This fosters critical thinking and practical application in real-world contexts.
September	2	Mopping Robot	Robotics	1. Grasp the fundamental principles of robotic movement and task automation. 2. Understand the importance of efficient design in robotics.
		Speed adjusted car with gear	Robotics	1. Learn about the mechanical advantage provided by different gear setups. 2. Understand gear ratios and how they affect speed and torque.
October	3	Car Race	Robotics	Develop skills in designing and constructing a functional model car.
		Reflection of light	Hands-on Science	Comprehend that light travels in straight lines and reflects off surfaces.
		App inventor	MIT	Students will understand the user interface and the basic components of the platform, including the designer and the blocks editor.
November	3	Website viewer	MIT	Students will learn how to display a web page within their app using the Web Viewer.
		Sound App	MIT	1. Students will understand fundamental programming concepts such as events, commands, and responses. 2. They will understand how to incorporate sound effects (e.g., a greeting or bee buzzing sound) and control their playback.
		Ball & Socket Joint	Hands-on Science	Students gain knowledge about the human skeletal system and the function of different types of joints.
December	3	Final Project	MIT	Students will explore the Speech Recognizer component to enable the app to respond to voice commands or convert spoken words into text.
		Floating of Magnet	Hands-on Science	1. Visualize and understand the force of repulsion between like magnetic poles. 2. Engage in hands-on experimentation to explore magnetic properties.
		Intelligent assistant with keywords	AI	1. Students will learn what intelligent assistants are, including how they function and where they are commonly used (e.g., smartphones, home devices). 2. Develop critical thinking skills by analyzing how intelligent assistants understand and process commands and by considering the ethics of AI and privacy concerns.
January	4	Intelligent assistant with keywords	AI	Gain a foundational understanding of the technologies behind intelligent assistants, such as speech recognition, natural language processing (NLP), and machine learning basics.
		Introduction to computer vision	AI	Students will understand the basics of computer vision and how to use vision training blocks
		Computer Vision and AI	AI	Students will learn how to identify face from image or video feed using algorithm that can identify facial features.
		Magnetic Car	Hands-on Science	1. Learn about the basic principles of magnetism, including magnetic poles and magnetic fields. 2. Understand how like poles repel and opposite poles attract.
		Computer Vision and AI	AI	Students will understand the basics of computer vision and how to use vision training blocks
		Revision	AI	

Feburary	3			1. Understand the basics of computer vision and its applications in recognizing and interpreting visual data.
		Computer Vision and AI	AI	2. Understand how hand gestures can be recognized and classified using machine learning algorithms.

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	2	Introduction to Python and its installation	Python	1. Understand key features that make Python user-friendly (like simple syntax, readability). 2. Understand where Python is used in the real world (e.g., web development, data science, automation).
		Observation of Radiant Heat	Hands-on Science	1. "Identify materials that are effective in absorbing radiant heat." 2. "Explain how the absorption of radiant heat affects temperature changes in different substances."
September	2	Lines and angles	Python Idle	1. Understand the concept of a "turtle" in a graphical programming environment. 2. Learn how to move the turtle in different directions (forward, backward).
		Practical geometry	Python Idle	Understand how to use angles in programming to create geometric shapes.
October	3	Practical geometry	Python Idle	Learn how mathematical concepts like angles and circles can be applied in programming.
		Mathematics	Python Idle	Familiarize with arithmetic, comparison, logical, assignment, and other types of operators in Python.
		Lung Diagram Model	Hands-on Science	1. "Demonstrate an understanding of the basic anatomical structure of the human lungs." 2. "Explain the mechanics of respiration and how the lungs facilitate the exchange of gases in the body."
November	3	Programming	Python Idle	1. Understand how to use if, elif (else if), and else statements to create conditions in Python. 2. Develop logical thinking skills by determining the conditions and actions in a program.
		Project	Python Idle	Grasp why loops are used in programming to repeat a sequence of instructions.
		Make an acid indicator	Hands-on Science	1. "Identify the color change in the presence of an acid or a base." 2. "Determine the pH of a solution using the indicator's color change."
December	3	3D Printing	Tinkercad	Learn the basics of designing for 3D printing, including the importance of 3D modeling software.
		Tinkercad	Tinkercad	Students will learn about the Tinkercad interface, including the workplane, toolbars, navigation controls, and view cube.
		Keychain Design	Tinkercad	Students will learn the fundamental principles of 3D design, including working with different shapes, manipulating dimensions, and understanding spatial orientation.
January	4	Nut Design	Tinkercad	1. Gain an understanding of thread design, including pitch, diameter, and types of threads. 2. Understand the importance of precision in creating a functional nut, ensuring that dimensions and threading are accurate.
		Bolt Design	Tinkercad	Develop skills in using Tinkercad software for detailed design, focusing on setting exact dimensions, creating thread patterns, and shaping the bolt head.
		Final project	Tinkercad	Encourages creative problem-solving and critical thinking.
		Image formation by lenses	Hands-on Science	1. "Describe how converging and diverging lenses create real and virtual images." 2. "Calculate the characteristics of images formed by lenses, such as their position, size, and type (real or virtual)."
February	3	Revision class		

February	3		

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	2	Python Introduction (Variables)	Python	1. Understand key features that make Python user-friendly (like simple syntax, readability). 2. Understand where Python is used in the real world (e.g., web development, data science, automation).
		Laws of reflection	Hands-on Science	Students will understand and apply the law of reflection, conduct experiments to observe it, measure and analyze angles of incidence and reflection, develop critical thinking, collaborate effectively, and communicate findings. They'll also relate the concept to real-world applications, enhancing their understanding of physics through hands-on experience.
September	2	Operators & Functions	Python	1. Learn how to define a function using the def keyword. 2. Understand how to call a function to execute the code it contains.
		Python Turtle	Python	Python Turtle facilitates creative programming through visual drawing and graphics.
		Python Project (Calculator)	Python	Students will learn basic Python programming, understand arithmetic operations, implement functions, handle user input, and debug code. They will develop problem-solving skills, practice logical thinking, and gain experience in creating functional applications, reinforcing their understanding of programming concepts.

October	3	Python Project (Calculator)	Python	Students will learn basic Python programming, understand arithmetic operations, implement functions, handle user input, and debug code. They will develop problem-solving skills, practice logical thinking, and gain experience in creating functional applications, reinforcing their understanding of programming concepts.
		Electrolysis	Hands-on Science	1. Understand the process of oxidation and reduction reactions occurring at the anode and cathode, respectively. 2. Encourage critical thinking about how modifications to the electrolysis setup (like changes in voltage, electrolyte concentration) can affect the outcomes.
November	3	Button widget	Python	Understand how to create a button in Tkinter using the Button class.
		Callback function	Python	Learn to connect a Python function to a button using the command attribute.
		Entry widget	Python	Understand how to configure various Entry widget properties like width, borderwidth, and relief.
December	3	Final Project	Python Programming Language	1. Gain a foundational understanding of various GUI widgets like labels, entry fields, buttons, checkboxes, and radio buttons. 2. Understand the importance of a visually appealing and logical layout for user experience.
		Air is essential for burning	Hands-on Science	Understand that oxygen, a key component of air, is necessary for most burning processes.
		Robotics and its components	Robotics Tinkering Kit	1. Understand the growing role of robotics in society and potential future applications. 2. Identify and name the various components included in the robotics kit, such as motors, sensors, controllers, batteries, and structural elements.
		Android controlled car	Robotics Tinkering Kit	1. Learn about the basic structure and mechanics of a 2-wheel driving bot. 2. Enhance problem-solving skills by troubleshooting mechanical and programming issues.

January	4	object restrict robot	Robotics Tinkering Kit	1. Learn about different types of sensors used in robotics for obstacle detection, such as ultrasonic, infrared, or LIDAR sensors. 2. Learn to interpret the data received from sensors to determine the presence and distance of obstacles.
				1. Learn about automated control systems and their applications in real-world scenarios like railway crossings. 2. Acquire programming skills to automate the barrier's operation, including writing code to process sensor inputs and control the barrier's movement.
		Automatic Railway track barrier	Robotics Tinkering Kit	
		final project	Robotics Tinkering Kit	Enhance problem-solving skills by identifying and resolving issues that arise during the design, construction, and testing phases.
Feburary	3	Revision		

Month	Number of Sessions	Name of Activity	Subject	Learning Outcome
August	2	Python	Python	1. Understand key features that make Python user-friendly (like simple syntax, readability). 2. Understand where Python is used in the real world (e.g., web development, data science, automation).
		Introduction to pandas	Python	1. Grasp the relevance and applications of data analysis in various fields such as science, business, and technology. 2. Recognize the role of Pandas in the data analysis and data science landscape.
September	2	List	Python	1. Learn the importance of these data types in organizing and storing data in Python. 2. Understand how to create and manipulate lists
		Dictornaries	Python	Grasp the concept and applications of dictionaries for storing data in key-value pairs.
October	3	DataFrame	Python	1. Students will understand what a DataFrame is and how it is used in data science and analytics. 2. They will learn about the structure of a DataFrame, including its rows, columns, and indexes.
		Analyzing Data	Python	1. Learn to import, clean, and preprocess data using Pandas. 2. Learn to apply basic statistical methods for data analysis.
		Basic Operations	Python	Understand how to handle missing data, remove duplicates, filter, and sort data.
November	3	Mean Median Mode	Python	Understand concepts like mean, median, standard deviation, correlation, and hypothesis testing.
		Final Project	Python	Develop skills in advanced data manipulation techniques like group-by, pivot tables, and multi-indexing.
		Final Project	Python	Develop skills in advanced data manipulation techniques like group-by, pivot tables, and multi-indexing.
December	3	Introduction to Image Processing	AI	1. Understand the concepts of Image processing and computer vision. 2. Learn about how images are represented digitally, including understanding pixels, color models (RGB, HSV), and image file formats.

		Read and write Image	AI	1. Learn about different image formats (e.g., JPEG, PNG) and their characteristics. 2. Gain proficiency in using image processing libraries (like OpenCV in Python) to read images into a programming environment.
		Read and write Videos	AI	1. Gain skills in using libraries like OpenCV to read video streams into a programming environment. 2. Understand how videos are loaded as a series of frames (images).
January	4	Draw geometrical shapes on Image	AI	Learn to draw basic shapes like lines, rectangles, circles, ellipses, and polygons on images.
		Image Thresholding	AI	1. Grasp the concept of image thresholding and its role in image processing. 2. Learn to set a threshold value and convert an image to binary (black and white) based on this value.
		Final Project (Face Detection)	AI	1. Grasp the basic principles of how algorithms detect human faces in images or videos. 2. Learn to apply face detection algorithms to both still images and real-time video streams.
Feburary	3	Introduction to Robotics and	Robotics	Learn about robotics and importance of designing
		Speed controlled robot	Robotics	Understand the mechanism of gear and motion transfer
		Obstacle avoider robot	Robotics	Learn to interface ultrasonic sensor with robot