

AeroBay Curriculum <> GRADE 5		
Session No.	Session Topic (Grade 5)	Objective
Session 1	<p>STEAM Unlocked: Tools & Tech for tomorrow</p> <p>Let's explore the world of STEAM education and the technology shaping our future! Get hands-on experience with advanced machinery like 3D printers and CNC machines, learn to use measuring tools, and work with mechanical and electronic tools to design, build, and innovate.</p> <p>Lab tools included: Electronic Tools hands on</p>	Students will understand the importance of STEAM education and its role in innovation. They will get hands-on experience with measuring tools like weighing machines, measuring tapes and explore advanced machinery such as 3D printers, CNC machines, and weather stations, and observe the working of mechanical and electronic tools
Session 2	<p>Bullseye Blaster: Ball Shooter Archer</p> <p>Launch into an exciting exploration of motion, forces, and precision by designing a Ball Shooter Archer! Discover how angles, energy, and forces impact the path of a projectile as you experiment with different shooting techniques to hit a target with accuracy.</p> <p>Kit included: Arrow sphere (Take away)</p>	Students will construct and test a ball shooter to understand how force, angle, and energy affect projectile motion. They will explore how adjusting the shooting angle and strength impacts distance and accuracy. Through hands-on trials, students will analyze the relationship between speed, trajectory, and force, applying their learning to real-world applications such as archery, catapults, and sports physics.
Session 3	<p>Suspension Car</p> <p>let's explore the exciting world of elasticity, energy, and magnetism by building a suspension car! Get ready to design, build, and test your own car!</p> <p>Kit included: Neo spring cruiser (Take away)</p>	students will understand key concepts of elasticity, energy transformation, and magnetism through the construction of a suspension car. They will explore how elastic materials help absorb shocks, how energy is stored and transferred, and how magnetic poles interact to create force and motion.
Session 4	<p>Air Pressure Detective: The Vacuum Barometer</p> <p>Let's uncover the mysteries of air pressure by building a Vacuum Barometer! In this session, you will explore how changes in air pressure can be measured using a simple homemade device. Learn how weather forecasters predict storms and why air pressure plays a crucial role in our daily lives.</p> <p>Kit included: Vacuum gauge (Take away)</p>	Students will construct a Vacuum Barometer to observe how air pressure affects liquids and weather patterns. Through this hands-on experiment, they will understand the principles of atmospheric pressure, force, and measurement. By recording and analyzing pressure changes, students will enhance their skills in scientific observation, data interpretation, and real-world application of physics concepts.
Session 5	<p>Deep Dive Explorer: The Science of Submarines</p> <p>Plunge into the depths of underwater exploration by building a submarine model! Discover how submarines sink and rise using the principles of buoyancy, pressure, and density.</p> <p>Kit included: Submarine (Take away)</p>	Students will construct and test a submarine model to understand how buoyancy and density determine whether an object sinks or floats. They will explore how submarines control their movement by adjusting the amount of water and air inside ballast tanks. Through hands-on experimentation, students will analyze the relationship between force, pressure, and underwater navigation.
Session 6	<p>Power Lift: The Science Behind Hydraulic Scissor Lifts</p> <p>Discover the power of fluid mechanics by building a Hydraulic Scissor Lift! Explore how hydraulic pressure is used in machines to lift heavy loads with minimal effort.</p> <p>Kit included: Hydro Scissor lift (Take away)</p>	Students will construct and test a Hydraulic Scissor Lift to understand the principles of hydraulic pressure and force transmission. They will explore how liquids exert equal pressure in all directions, enabling controlled lifting mechanisms. By experimenting with syringes and fluid-filled tubes, students will analyze the relationship between force, pressure, and movement.

Session 7-9	<p>Creative Coder: The Drawing Bot</p> <p>Design and build a vibrating Drawing Bot that moves across paper, creating unique patterns! By exploring motor vibrations, balance, and motion, students will understand how robots can be programmed to perform creative tasks.</p> <p>Kit Included: Scribble Bot (Student can choose any 1 take away from Scribble and Bubble machine)</p>	<p>Students will construct and test a Drawing Bot to understand how vibrations and unbalanced forces create motion. They will explore how different motor placements and weights affect movement patterns, mimicking real-world applications like robotic painting and autonomous drawing systems.</p>
	<p>Bubble Blaster: The Science of Bubbles</p> <p>Get ready to create a whirlwind of bubbles with your very own Bubble Machine! Discover the science behind surface tension, air pressure, and fluid dynamics as you build a device that produces mesmerizing bubbles of all shapes and sizes.</p> <p>Kit Included: Bubble Blaster (Student can choose any 1 take away from Scribble and Bubble Blaster)</p>	<p>Students will construct a motorized bubble machine and explore how bubbles form, why they are spherical, and what factors influence their size and stability. This session will also introduce design principles, encouraging students to test different bubble wand shapes and machine settings for optimal results.</p>
Session 10	<p>Innovator's Mind: Exploring Design Thinking</p> <p>Step into the world of innovation and problem-solving using the Design Thinking process! students will identify real-world problems, brainstorm creative solutions, prototype their ideas, and test their designs.</p> <p>Lab machinery included: 3D Printer and filament (Hands on by Trainer)</p>	<p>Students will understand and apply the Design Thinking process—empathizing with users, defining problems, ideating solutions, prototyping, and testing. They will develop creativity, problem-solving skills, and collaboration by designing and iterating their own solutions to real-world challenges.</p>
Session 11	<p>Future Makers: Exploring 3D Printing</p> <p>Step into the future of design and manufacturing with 3D printing! Explore how digital models transform into physical objects layer by layer. Learn about materials, design principles, and applications of 3D printing in various industries, from healthcare to space exploration.</p> <p>Lab machinery included: 3D Printer 3D printed design by student (Take away)</p>	<p>Students will understand the fundamentals of 3D printing, including how digital designs are converted into physical objects. They will explore the importance of precision, measurement, and iteration in the design process while developing spatial reasoning and problem-solving skills.</p>
Session 12	<p>Power Thrust: Understanding Jet Engines</p> <p>Dive into the mechanics of jet propulsion and explore how airplanes achieve high-speed flight! In this interactive session, students will discover the inner workings of a jet engine, from air intake to exhaust, learning about thrust, air pressure, and fuel combustion. They will also investigate how different engine designs impact speed, efficiency, and aerodynamics.</p> <p>Lab Tools included: Transmitter and Jet engine</p>	<p>Students will understand the science behind jet propulsion and how forces interact to generate thrust. They will explore fuel combustion, air compression, and aerodynamics, gaining insight into how jet engines power modern aviation.</p>

<p>Session 13</p>	<p>STEAM Mastery Challenge: Intra-Class Competition</p> <p>Get ready for an exciting STEAM Mastery Challenge, put your learning to the test through an engaging intra-class competition! This session will bring together all the concepts explored in previous activities, allowing students to compete in hands-on challenges that assess their problem-solving skills, creativity, and conceptual understanding.</p> <p>Lab materials included: Prop usage during presentation</p>	<p>Students will be able to apply their knowledge to solve real-world challenges, demonstrate their understanding through hands-on tasks, and enhance their critical thinking and teamwork skills in a competitive environment. They will also evaluate their own proficiency, identify areas for improvement, and build confidence in practical problem-solving and innovation.</p>
<p>Session 14</p>	<p>Smooth Craft: Shaping with Sanding</p> <p>let's refine our woodworking skills by learning the art of sanding! In this hands-on session, you will work with Balsa wood to create smooth surfaces and precise airfoil shapes. Discover how sanding transforms rough materials into aerodynamic forms and master an essential skill in craft and engineering!</p> <p>Lab tool included: Sanding Sticks</p>	<p>students will develop hand skills in woodworking by learning to sand and shape Balsa wood. They will understand the importance of smoothing surfaces for aerodynamic efficiency, particularly in airfoil design.</p>
<p>Session 15</p>	<p>Aero Glide</p> <p>let's dive into the world of aeromodelling by building a Catapult Glider! In this hands-on session, you will explore how gliders fly, understand the four forces of flight, and experience the thrill of crafting your own aircraft. Get ready to design, build, and launch!</p> <p>Kit included: Catapult Glider - Hunter (Take away)</p>	<p>Students will understand the fundamentals of gliders and aeromodelling by constructing a Styro-Balsa Glider. They will explore the role of lift, weight, thrust, and drag in flight and learn how design choices impact aerodynamics.</p>
<p>Session 16</p>	<p>Glide Quest: Soar with your Glider</p> <p>Come, let's take flight! In this exciting session, you will launch and test your Styro-Balsa Glider, experiencing firsthand how gliders soar through the air. Get ready to fly, analyze, and improve!</p> <p>Ground activity: Glider flying by students</p>	<p>students will gain a deeper understanding of aeromodelling and gliding by flying the Styro-Balsa Gliders they built. They will observe how lift, weight, thrust, and drag interact in real-time and learn how adjustments affect flight performance.</p>
<p>Session 17-18</p>	<p>Sky Sim: Master the Virtual Skies</p> <p>Take control and fly like a pilot! Understand control surfaces, hand-eye coordination, and real-time flight mechanics as you navigate the virtual skies.</p> <p>Software included: Simulation software Lab tools included: Transmitter, AA Batteries, Simulation cables</p>	<p>students will develop a practical understanding of flight control and aircraft maneuvering through flying simulations using a transmitter. They will explore the functions of control surfaces, enhance their hand-eye coordination, and gain confidence in handling a virtual aircraft.</p>

<p>Session 19</p>	<p>RC Takeoff: Pilot the Skies</p> <p>Let's experience the thrill of real flight! In this action-packed session, you will take control of an RC plane using a transmitter, witnessing the principles of flight in action.</p> <p>Ground activity: Ground flying by trainer</p> <p>Lab tools included: 3D Plane, Transmitter and Caddy Box equipment (Anemometer, Battery Checker, Tools)</p>	<p>Students will gain first-hand experience in flying an RC plane using a transmitter. They will understand how control surfaces like ailerons, elevators, and rudders affect flight and develop precision and coordination through real-time piloting.</p>
<p>Session 20</p>	<p>Sky Rescuer: Rocket with Parachute</p> <p>Launch into an exciting journey of aerodynamics and controlled descent by building a Rocket with a Parachute! Explore the principles of thrust, gravity, air resistance, and drag as you design and test a rocket that soars high and returns safely with the help of a parachute.</p> <p>Kit included: Parachute Rocket (Take away)</p>	<p>Students will construct and launch a parachute-assisted rocket to understand the forces acting on a flying object. They will explore how thrust propels the rocket upward, while gravity pulls it back down, and air resistance slows its descent. By adjusting parachute size and design, students will experiment with controlled landings and gain insights into real-world space missions and safe landings.</p>
<p>Session 21-22</p>	<p>Rocket Blast: Launch Mission</p> <p>Learn about air pressure-based launching and see how your rocket soars to new heights!</p> <p>Ground activity: Water pressure Rocket launching</p>	<p>Students will gain hands-on experience in launching their paper rockets, reinforcing their understanding of Newton's Third Law (action and reaction). They will explore how air pressure propels rockets, analyze the flight path, and observe the effects of stability and aerodynamics.</p>
<p>Session 23</p>	<p>Precision Grabber: The Robotic Arm</p> <p>Explore the world of robotics and automation by understanding how a robotic arm functions! Learn about the mechanical principles behind robotic arms, including levers, joints, and rotational movement. Discover how these arms are designed for precision tasks in industries like manufacturing, space exploration, and medicine.</p> <p>Lab machinery included: Transmitter and Robotic arm</p>	<p>Students will understand the basic structure and movement of robotic arms, focusing on mechanical components like joints, levers, and rotational motion. They will explore real-world applications and analyze how different designs improve efficiency and accuracy.</p>
<p>Session 24</p>	<p>Spotlight: Exhibit with confidence</p> <p>Learn how to engage your audience, structure your ideas, and deliver a powerful presentation with clarity and impact!</p> <p>Lab materials included: Prop usage during presentation</p>	<p>Students will choose any topic from the above sessions covered and prepare a complete presentation of the same. Students will develop public speaking, presentation, and communication skills by delivering a structured presentation on topics covered so far. They will learn how to organize their thoughts, express ideas clearly, and engage an audience with confidence.</p>