AeroBay Curriculum <> GRADE 8		
Session No.	**Session Topic (Grade 8)**	**Objective**
Session 1	**Aero Explorer: Introduction to Aerospace** Step into the world of aerospace engineering and discover how airflows shape flight! Using a wind tunnel, test different airfoil designs and understand the principles of lift, drag, and aerodynamics. **Lab machinery included: Wind Tunnel and Sanding sticks** **Software included: AeroBay App**	Students will explore the fundamentals of aerodynamics by experimenting with different airfoil shapes in a wind tunnel. They will analyze how air pressure, airflow patterns, and design influence flight performance, gaining insights into real-world aerospace engineering.
Session 2	**Hyberbolic Effect** Unravel the mysteries of curved geometry! In this session, students will explore the fascinating hyperbolic effect by designing and building their own models. Discover how mathematical curves shape real-world structures and challenge your perception of space! **Kit included: Infinity Curve (Take away)**	Students will understand the principles of hyperbolic geometry, explore its applications in architecture and nature, and develop spatial reasoning skills through hands-on model creation.
Session 3	**Orbit Explorer: Build Your Own Satellite Model** Step into the world of space technology! In this session, design and construct a model satellite while exploring how satellites orbit Earth, collect data, and support global communication. **Lab machinery included: Satellite**	Students will learn about the functions and types of satellites, the role of gravity in orbital motion, and how satellites contribute to everyday life. They will also explore basic engineering concepts related to satellite design and space exploration.
Session 4	**Meet the Weather Man: Build Your Own Weather Station** Become a meteorologist for a day! In this hands-on session, students will create their own mini weather station and explore how scientists predict the weather using various instruments. **Lab machinery included: Weather Station**	Students will learn about atmospheric conditions, weather measurement tools like barometers, anemometers, and thermometers, and how to analyze weather patterns to make predictions. They will also explore the importance of weather forecasting in daily life and disaster preparedness.
Session 5-6	**Cosmic Creation: Design Your Space Model** Unleash your creativity and engineering skills by designing your very own space model! In this session, students will explore the structure and purpose of space stations, satellites, and spacecraft, bringing their futuristic designs to life. **Software included: Designing software - Sketchup**	Students will understand the fundamental design principles of space structures, including aerodynamics, material selection, and structural integrity. They will apply engineering concepts to create a model that balances functionality and innovation in space exploration.

Session 7-8	**Precision Engineering: Develop Your Model with CNC** Step into the world of advanced manufacturing as you design and create your own model using CNC (Computer Numerical Control) cutting technology! Explore the precision and efficiency of CNC machining while bringing your ideas to life. **Lab machinery included: CNC machine**	Students will learn the fundamentals of CNC machining, including design translation, material selection, and automated cutting techniques. By the end of the session, they will develop a functional model, gaining hands-on experience in digital fabrication and precision engineering.
Session 9	**Martian Odyssey: Build Your Mars Rover & Lander** Embark on an interplanetary adventure as you design and construct your own Mars Rover with a functional lander! Discover the engineering behind space exploration and the challenges of landing and navigating on the Martian surface. **Lab machinery: Mars Rover (Hands on)**	Students will explore the principles of space robotics, planetary landings, and rover mobility. They will design and assemble a Mars Rover with a lander, applying concepts of physics, mechanics, and electronics to create a functional exploration model.
Session 10-11	**Battle Bots: Build Your RC Fighting Robot Car** Gear up for an intense robotic showdown! In this hands-on session, design and assemble your own RC-controlled fighting robot car, equipped with tactical movements and defensive strategies. **Kit included: Battle Bot (Students can take any one take away between Battle Bot and Balance Table)**	Students will explore robotics, remote control mechanisms, and mechanical design while building their own RC fighting robot. They will learn about motor control, power transmission, and structural durability to create a competitive battle-ready bot.
	Gravity Master: Build Your RC Balance Table Test the limits of stability and control! In this exciting session, design and construct an RC-controlled balance table that responds to precise movements and counterbalances shifting weights. **Kit included: Balance Table (Students can take any one take away between Battle Bot and Balance Table)**	Students will explore the principles of balance, center of gravity, and motorized control systems. They will develop problem-solving skills by adjusting weight distribution and fine-tuning their RC system to maintain equilibrium in dynamic conditions.
Session 12-13	**AeroCrafter: Design Your Air Wing Model** Take flight into the world of aerodynamics! In this hands-on session, design and build your own air wing model, exploring how different wing shapes affect lift and stability.	Students will understand the principles of aerodynamics, including lift, drag, and wing design. They will experiment with airfoil shapes and angles to optimize flight performance, applying engineering and design thinking skills.
Session 14-15	**Sky Engineer: Develop Your Plane Model** Step into the shoes of an aerospace engineer! In this session, design and construct your own plane model, exploring the science behind aerodynamics, stability, and propulsion.	Students will learn about the fundamental forces of flight—lift, thrust, drag, and gravity—while designing and assembling a functional plane model. They will apply engineering principles and problem-solving skills to optimize their design for better performance.

Session 16	**Power Up: Electrify Your Plane!** Take your aircraft to the next level by integrating electronics! In this session, students will add motors, circuits, and power sources to their plane models, bringing them to life with real propulsion. **Lab machinery included: Electronics**	Students will explore the role of electrical components in aviation by incorporating motors and power systems into their plane models. They will learn about circuits, energy transfer, and propulsion, enhancing their understanding of aerodynamics and electronic systems.
Session 17-18	**Sky Sim: Master the Virtual Skies** Take control and fly like a pilot! Understand control surfaces, hand-eye coordination, and real-time flight mechanics as you navigate the virtual skies. **Software included: Simulation software** **Lab tools included: Transmitter, AA Batteries, Simulation cables**	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.
Session 19-20	**RC Takeoff: Pilot the Skies** 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. **Ground activity: Ground flying by trainer** **Lab tools included: 3D Plane, Transmitter and Caddy Box equipment (Anemometer, Battery Checker, Tools)**	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.
Session 21	**Mega Motion: Design Your Giant Wheel** Step into the world of large-scale engineering by designing and building your own Giant Wheel! Explore structural stability, rotational motion, and mechanical design as you bring this iconic amusement ride to life.	Students will understand the principles of rotational motion, load distribution, and structural stability by designing and assembling a model Giant Wheel. They will apply concepts of physics, geometry, and mechanical engineering to ensure a functional and balanced structure.
Session 22	**Spin to Win: Develop Your Giant Wheel** Get ready to construct your own Giant Wheel! Dive into the mechanics of rotational motion, load balancing, and structural design as you bring this engineering marvel to life using precision tools. **Kit included: Wooden Ferris (Take away)**	Students will apply concepts of physics and mechanical engineering to design and develop a working Giant Wheel. They will explore rotational forces, stability, and structural integrity while assembling their model using CNC or manual fabrication techniques.
Session 23	**Motion in Art: Build Your Kinetic Sculpture** Combine engineering and creativity to design a mesmerizing kinetic sculpture! Explore the principles of motion, balance, and mechanical energy as you bring your artistic vision to life with moving parts. **Kit included: Kinetic Sculpture (Take away)**	Students will understand the science behind kinetic energy, balance, and mechanical linkages while designing and assembling a moving sculpture. This hands-on project blends physics, engineering, and art to create dynamic, interactive designs.

Session 24	**Spotlight: Exhibit with confidence** Learn how to engage your audience, structure your ideas, and deliver a powerful presentation with clarity and impact! **Lab materials included: Prop usage during presentation**	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.