AeroBay Curriculum <> GRADE 9-10		
Session No.	**Session Topic (Grade 9)**	**Objective**
Session 1	**World of Design: Unleash Your Creativity** Step into the exciting world of design and innovation! Whether it's architecture, product design, or engineering structures, this session will challenge you to think creatively and transform ideas into reality.	Students will explore design thinking principles, learn about form and function, and apply problem-solving skills to create innovative models. They will integrate concepts of measurement, geometry, and material science to develop functional and aesthetic designs.
Session 2-3	**Blueprint Mastery: Design Your Home Floor Plan** Unleash your creativity as you design the perfect home layout! Learn the fundamentals of architectural design, space planning, and scale while crafting a detailed floor plan. **Software included: Software for designing**	Students will understand spatial awareness, measurement, and proportion by designing a home floor plan. They will apply mathematical concepts such as area, perimeter, and scaling while exploring the basics of architectural drawing and design principles.
Session 4-5	**Dream Dwelling: Develop Your Home** Bring your dream home to life! Using CNC cutting and design techniques, craft a miniature home model while exploring architectural concepts and construction principles. **Kit included: Student's design of Home (Take away)**	Students will apply design thinking and engineering skills to develop a home model. They will understand the basics of structural integrity, spatial planning, and material selection while integrating measurement and geometry concepts.
Session 6	**Sky Pioneers: Introduction to Drone Technology** Take flight into the world of drones! In this session, students will explore the fundamentals of drone technology, understand how multi-copter drones work, and get hands-on experience with basic drone controls. **Lab material included: Drone (Hands on)**	Students will learn the principles of aerodynamics, thrust, lift, and stability in drone flight. They will also understand the applications of drone technology in various fields, including surveillance, delivery, and disaster management.
Session 7	**Circuit Masters: Exploring Electronics in Motion** Unravel the magic behind electronics! In this session, students will dive into the world of ESCs, motors, power distribution boards, and batteries, discovering how these components power modern machines, including drones, robots, and RC vehicles.	Students will understand the role of electronic speed controllers (ESCs), motors, and power distribution in electrical systems. They will explore how energy flows through circuits and gain hands-on experience in assembling and troubleshooting electronic components.

Session 8-9	**Skyframe Build: Assembling Your Drone Frame** Get ready to construct the backbone of your drone! In this session, students will assemble a sturdy drone frame, learning about aerodynamics, structural integrity, and the importance of lightweight materials in aviation. **Lab machinery : Drone (Hands on Session)**	Students will understand the design principles behind drone frames, explore material selection for stability and weight optimization, and gain hands-on experience in assembling a functional drone structure.
Session 10-11	**Drone Brain: Mastering Flight Controllers** Unlock the intelligence behind drone navigation! In this session, students will explore how flight controllers process sensor data, stabilize flight, and enable precise movement. **Lab tools included: Drone**	Students will understand the role of flight controllers in drone operation, learn about gyroscopes, accelerometers, and PID tuning, and gain hands-on experience configuring a flight controller for stable flight.
Session 12	**Command & Control: Firmware and Transmitter Mastery** Take full control of your drone! In this session, students will explore how firmware programs the brain of a drone and how transmitters communicate flight commands for seamless operation.	Students will understand the role of firmware in drone functionality, learn how to configure and update firmware, and explore transmitter settings for precise flight control.
Session 13	**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 14-15	**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**	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 16-17	**Bridge Builders: Test Your Mega Structure** Can your bridge withstand the ultimate test? In this hands-on session, you will design, build, and test a bridge structure while exploring the engineering principles behind strength and stability. **Kit included: Bridge (Take away)**	Students will learn about load distribution, tension, and compression by constructing model bridges. They will apply concepts of force, balance, and material properties to analyze structural integrity and optimize their designs for maximum strength.
Session 18-19	**Mighty Lift: Build Your Robotic Crane** Step into the world of robotics and engineering by constructing your own robotic crane! Learn how motors, gears, and pulleys work together to lift and move objects with precision. **Kit included: MDF Robotic Crane (Take away)**	Students will understand the role of electronic speed controllers (ESCs), motors, and power distribution in electrical systems. They will explore how energy flows through circuits and gain hands-on experience in assembling and troubleshooting electronic components.
Session 20-21	**Smart Living: Automate Your Home with IoT** Step into the future by transforming your home into a smart space! Learn how IoT devices communicate, automate tasks, and make daily life more efficient.	Students will explore the fundamentals of IoT, understand how sensors and actuators work together, and create a basic automated system to control home appliances remotely.
Session 22	**Race to the Fastest Path: Brachistochrone Model** Can you find the quickest way down? Build and test a Brachistochrone curve to explore the fascinating physics behind the fastest descent path. **Kit included: Brachistochrone (Take away)**	Students will understand the principles of gravity, motion, and optimization by constructing and analyzing a Brachistochrone curve. They will compare different slopes and learn why the shortest path isn't always the fastest.
Session 23-24	**Code Your Bot: Bringing Otto to Life!** Turn your Otto Bot into a smart, interactive robot! Learn to code its movements, sounds, and expressions, making it respond to commands and obstacles. **Kit included: Otto Bot (Group)**	Students will explore basic robotics programming, understand sensor integration, and develop logical thinking by coding their Otto Bot to perform specific tasks and interactions.