SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)

Department of Aerospace Engineering

23AST101-Fundamentals of Aerospace Engineering

UNIT-1:
History of Flight

History and Types of Aircrafts

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History of Aircraft

Aircraft are vehicles capable of atmospheric flight, propelled by various mechanisms like engines, wings, or rotors. The history and types of aircraft can be divided into distinct categories based on their evolution and technological advancements:

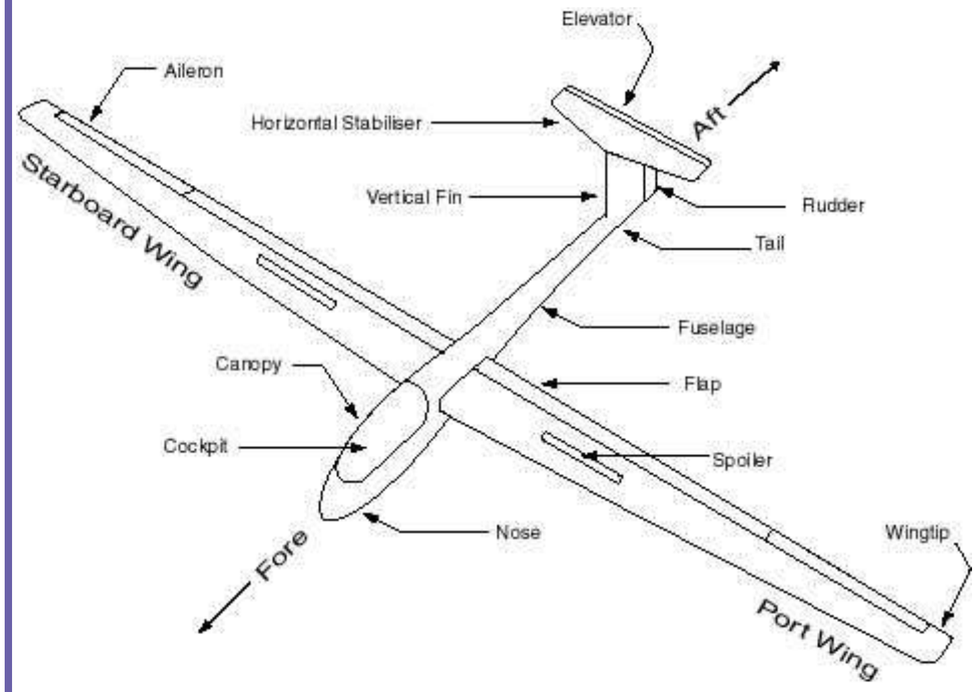
History of Aircraft

1.Early Concepts (Before 18th Century)

1. **Ancient Dreams:** Early myths and sketches (e.g., Da Vinci's flying machines) imagined human flight but lacked practical mechanisms.
2. **Kites and Gliders:** In ancient China (5th century BCE), kites demonstrated the principles of lift and drag.

2.Pioneering Flights (18th–19th Century)

1. **Hot Air Balloons (1783):** The Montgolfier brothers launched the first manned balloon flight.
2. **Gliders (19th Century):** Otto Lilienthal's experiments laid the groundwork for controlled, heavier-than-air flight.



History of Aircraft

- **Powered Flight (1903 Onwards)**
- **Wright Brothers (1903):** Achieved the first powered, controlled flight with the Wright Flyer.
- **World War I (1914–1918):** Aviation technology advanced rapidly for reconnaissance and combat.

- **Golden Age of Aviation (1920–1939)**
- Introduction of commercial air travel.
- Development of faster, more reliable planes like the Douglas DC-3.

- **Jet Age (1940s Onwards)**
- **World War II:** Introduction of jet engines (e.g., Messerschmitt Me 262).
- **Post-War Boom:** Expansion of civil aviation, supersonic flight, and long-haul airliners like the Boeing 747.

- **Modern Era (1970s–Present)**
- Advances in aerodynamics, materials, and electronics.
- Rise of unmanned aerial vehicles (UAVs) and sustainable aircraft.

Types of Aircraft

Aircraft can be classified based on several criteria, including propulsion, structure, and use.

1. Lighter-Than-Air Aircraft

Balloons: Use hot air or gas like helium to achieve lift (e.g., hot air balloons, weather balloons).

Airships: Rigid or semi-rigid structures powered and steerable (e.g., Zeppelins, blimps)

2. Heavier-Than-Air Aircraft

Fixed-Wing Aircraft:

- **Propeller-Driven:** Uses piston engines or turboprops (e.g., Cessna 172).
- **Jet-Powered:** High-speed aircraft using jet engines (e.g., Boeing 747, Concorde).
- **Gliders:** Unpowered planes that rely on air currents (e.g., sailplanes).

Rotorcraft:

- **Helicopters:** Use rotors for lift and propulsion (e.g., Sikorsky UH-60 Black Hawk).
- **Gyrocopters:** Hybrid of fixed-wing and rotorcraft principles.

Tiltrotor Aircraft: Combine helicopter-like takeoff and fixed-wing flight efficiency (e.g., V-22 Osprey).

3. Special-Purpose Aircraft

Military: Fighters, bombers, reconnaissance planes (e.g., F-22 Raptor, B-2 Spirit).

Commercial: Passenger and cargo planes (e.g., Airbus A320, Boeing 747).

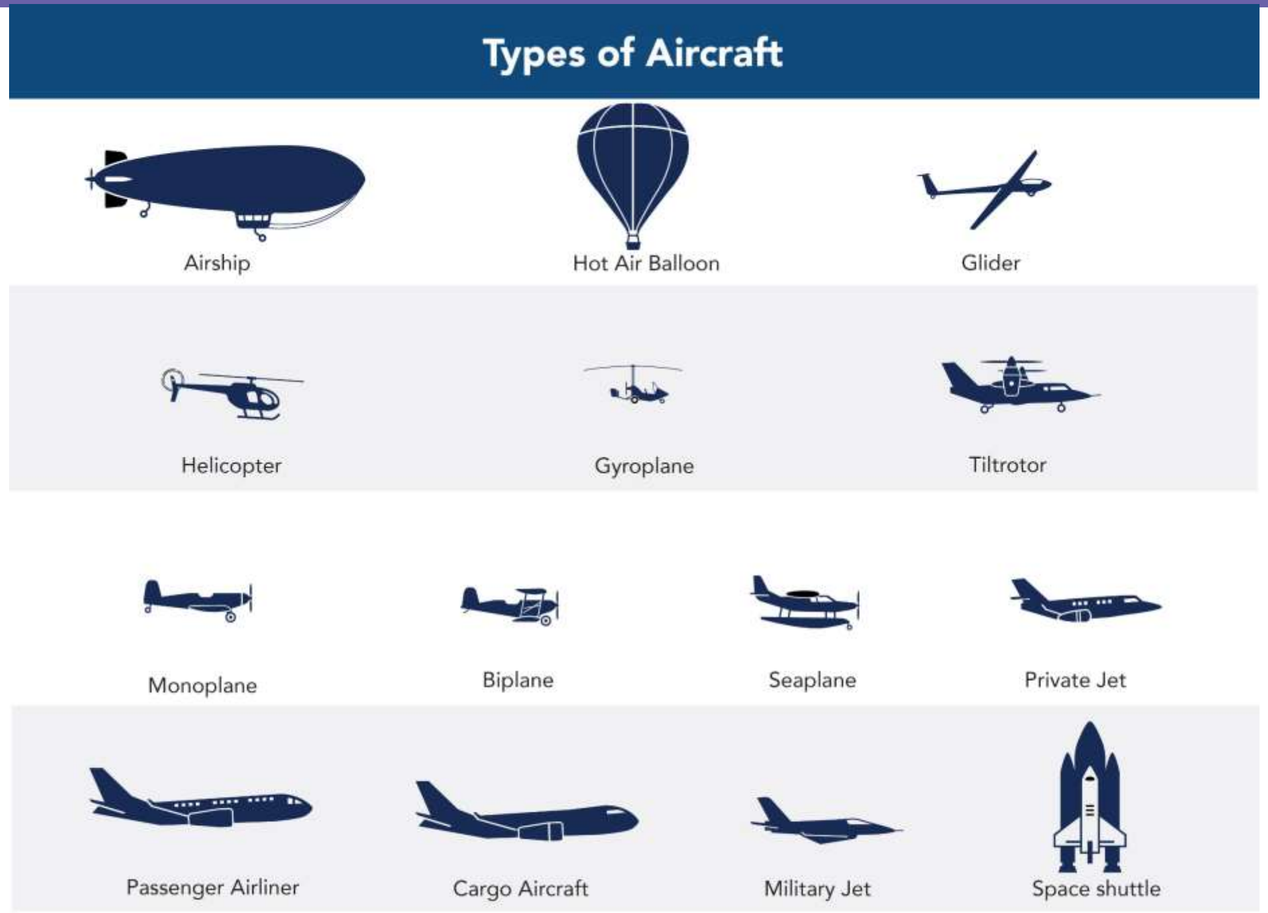
Experimental: Designed for testing new technologies (e.g., X-15).

Types of Aircraft

4. Unmanned Aerial Vehicles (UAVs)
Drones: Remote-controlled or autonomous aircraft for surveillance, delivery, or recreation (e.g., DJI Phantom, MQ-9 Reaper).

5. Spaceplanes
Designed for suborbital or orbital flight (e.g., Space Shuttle, Virgin Galactic's SpaceShipTwo).

Each type of aircraft reflects humanity's ingenuity and adaptation to various needs, from personal travel to global exploration.



THANK YOU!