



# **SNS COLLEGE OF TECHNOLOGY**

**An Autonomous Institution  
Coimbatore – 35**

Accredited by NBA – AICTE and Accredited by NACC – UGC with 'A++ Grade  
Approved by AICTE , New Delhi and Affiliated to Anna University , Chennai.

## **DEPARTMENT OF AEROSPACE ENGINEERING**

### **19ASO301 BASICS OF AERONAUTICAL ENGINEERING**

#### **UNIT 2 – AERODYNAMICS**



## UNIT 2 – AERODYNAMICS



- *Aerodynamic Forces*
- *Drag*
- *Mach Number*
- *Center of Pressure & Aerodynamic Center*
- *Components of Airplane*



## TEXT BOOK



- *Anderson. J D, “Introduction to Flight”, McGraw-Hill, 1995*
- *Richard S. Shevel, “Fundamentals of Flight”, Prentice Hall, 2010*



## *Components of Airplane*





# Components of Airplane



## **Cockpit**

*The control center and workspace for the flight crew, typically located in the forward section of the fuselage.*

## **Jet Engine**

*A Jet engine is a type of engine, which discharges exhaust/hot gas at a very high velocity, which generates forward thrust.*

## **Fuselage**

*The long hollow tube that holds passengers and cargo, also known as the body of the airplane.*

## **Wings**

*Wings (Airfoils) generate the lifting force needed for the flight. The wings are in the middle and the rear of the aircraft.*

.





# Components of Airplane



## ***Aileron***

*An aileron (French for "little wing" or "fin") is a hinged flight control surface usually a part of the trailing edge of each wing of an aircraft.*

## ***Flap***

*An aircraft flap is a hinged panel on the wing that enhances the lift and drag. Flaps are used for takeoff and landing.*

## ***Empennage***

*The tail end of the aircraft is the empennage, which helps in maintaining stability by the assistance of the rudder and elevator.*

## ***Slats***

*Slats are extendable wing sections located on the leading edge of an aircraft wing that increases lift during takeoff, landing and low-speed flight. It caters for a higher angle of attack.*



## Components of Airplane



### ***Rudder***

*An aircraft's rudder is a movable surface that controls the yaw of the plane, or its rotation around its vertical axis.*

### ***Elevator***

*An aircraft's elevator is a flight control surface that controls the pitch of the airplane.*

### ***Vertical and horizontal Stabilizers***

*Vertical and horizontal stabilizers are parts of an airplane's tail that helps in maintaining balance and prevents unwanted movement.*

### ***Rear Door***

*A Rear door in an airplane refers to the passenger entry door located towards the back of the aircraft.*



# Components of Airplane



## ***Spoilers***

*Spoilers are hinged plates on the top of an aircraft wing that increases drag and decreases lift.*

## ***Power Plant***

*Generates electric power for operating various auxiliary equipment and instruments.*

## ***Landing Gear***

*A plane can't function without landing gear. Shock absorbers and wheels are part of the landing gear.*