SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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

DEPARTMENT OF AEROSPACE ENGINEERING

23AST206 – AERODYNAMICS

II YEAR IV SEM

UNIT 3 – PARAMETERS FOR AIRFOIL AND WING CHARACTERISTICS

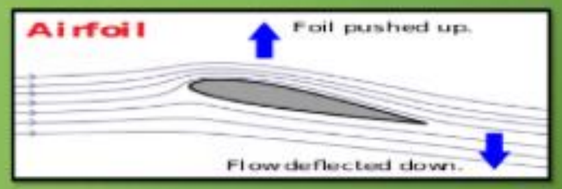
TOPIC – AIRFOIL AND WING GEOMETRY PARAMETERS

AIRFOIL AND WING GEOMETRY PARAMETERS

Airfoil

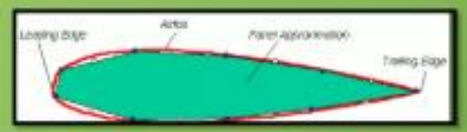
- Airfoil is a part of the aircraft which is used to generate lift.

Without airfoil aircraft can never fly because no lift is generated thus aircraft never moves in upward direction. The parts such as wing and tail surface are known as airfoil. It has leading edge and trailing edge.



Leading Edge

- Leading edge is the front of the airfoil. Leading edge can present the airfoil function. If leading edge is thick or a cambered then it is used in commercial aircrafts because commercial aircraft operate at low speed and high lift but if its leading edge is sharp or non cambered then this type of airfoils are used in fighter aircrafts because fighter aircraft operate at high speed and low lift.



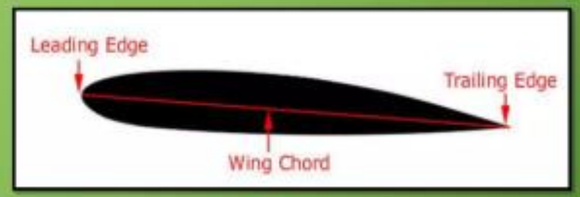
AIRFOIL AND WING GEOMETRY PARAMETERS

Trailing Edge

- Trailing edge is back of the airfoil or wing. Trailing edge consist of ailerons and flaps which are used to operate aircraft in air. The airflow separated by leading edge rejoins at trailing edge. The trailing edge may be sharp, flat or rounded.

Chord

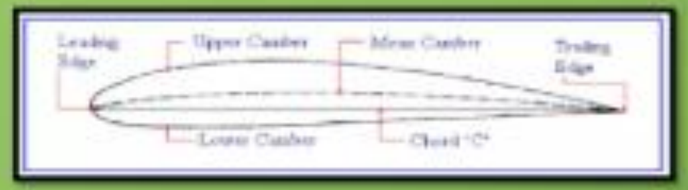
- Chord is an imaginary straight line which joins leading edge and trailing edge. Chord determine the width of the wing. Most wings are not rectangular, so they have different chords at different positions.

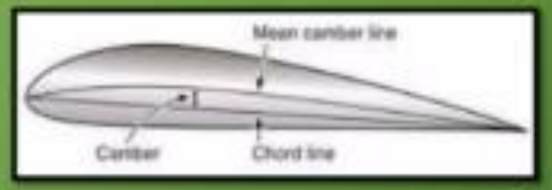


AIRFOIL AND WING GEOMETRY PARAMETERS

Camber

- Camber determine thickness of airfoil. It is characteristic curve of upper or lower surface
- If airfoil is thick then it is cambered and non symmetrical or Asymmetrical. This airfoil is used for commercial aircraft.
- If airfoil is sharp then it has low cambered and it is symmetrical. This airfoil is used in fighter aircraft.

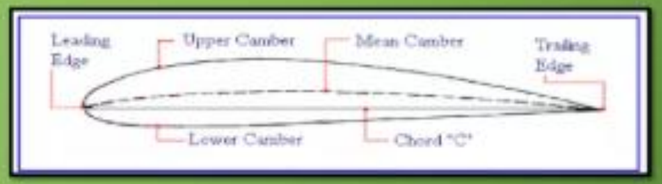




AIRFOIL AND WING GEOMETRY PARAMETERS

Mean Camber

- An imaginary line which divides airfoil in tow equal parts is called Mean Aerodynamic camber.
- Line is from leading edge to trailing edge.
- It may or may not straight line.



Naca Airfoil Numbering System

- Naca consist following types of airfoil
- 4-Digit airfoil
- 5-Digit airfoil

Thank You