An **airfoil** is the shape of a wing, blade (of a propeller, rotor, or turbine), or sail (as seen in cross-section).An airfoil-shaped body moved through a fluid produces an aerodynamic force. The component of this force perpendicular to the direction of motion is called lift. The component parallel to the direction of motion is called drag. Subsonic airfoils have a characteristic shape with a rounded leading edge, followed by a sharp trailing edge, often with a symmetric curvature of upper and lower surfaces. Foils of similar function designed with water as the working fluid are called hydrofoils.

The lift on an airfoil is primarily the result of its angle of attack and shape. When oriented at a suitable angle, the airfoil deflects the oncoming air (for fixed-wing aircraft, a downward force), resulting in a force on the airfoil in the direction opposite to the deflection. This force is known as aerodynamic force and can be resolved into two components: lift and drag. Most foil shapes require a positive angle of attack to generate lift, but cambered airfoils can generate lift at zero angle of attack. This "turning" of the air in the vicinity of the airfoil creates curved streamlines, resulting in lower pressure on one side and higher pressure on the other. This pressure difference is accompanied by a velocity difference, via Bernoulli's principle.

The main objective of the project is to design an air foil with standard co ordinates and perform cfd analysis with different angle of attacks to represent pressure differences. And static analysis included finding out maximum shear stress on air foil.

Design of air foil is done in solid works premium software2014. And cfd analysis carried out in solid works flow simulation. And structural analysis carried out in solid works simulation.