# Chapter 09 - External Incompressible Viscous Flow

## Boundary Layers

### The Boundary-Layer Concept

* **Disturbance Thickness** : is defined as the distance above the wall where
* **Displacement Thickness** : is the distance the plate would be moved so that the loss of mass flux (due to reduction in uniform flow area) is equivalent to the loss the boundary layer causes. If we imagine keeping the velocity at a constant U, and instead move the plate up a distance .
* **Momentum Thickness** : is the distance the plate would be moved so that the loss of momentum flux is equivalent to the loss the boundary layer actually causes.

### Momentum Integral Equation