Teaching and Learning Objectives of Week 6

1. Define, Illustrate, and Compare and Contrast the following terms and concepts:

    External vs. Internal flow
    Flow over a flat plate
        Boundary layer versus inviscid flow region
            Boundary layer thickness
        Reynolds number based on distance from leading edge
        Critical Reynolds number
        Friction coefficient
            Laminar flow
            Turbulent flow
            Combined laminar and turbulent flow

    Bluff (Blunt) vs. Streamlined Body
        Flow separation
            Angle of attack
    Drag force
        Skin friction drag vs. Pressure (form) drag
        Drag coefficient
            Frontal area
        Terminal velocity
        Streamlining
    Lift force
        Lift coefficient
            Planform area
            Minimum flight speed

2. Given sufficient information, determine the drag force for external flow over a body.
3. Given sufficient information, determine the lift force for external flow over a body
4. Given sufficient information about fluid flow parallel to a flat plate, determine the Reynolds number based on distance from leading edge, the boundary-layer thickness and the local skin-friction coefficient at any point on the plate and the average skin-friction coefficient for the plate. Based on the Reynolds number, determine the drag of the fluid on the plate.