FAR 23 LOADS Training Outline

April 2014

Introduction
     Program Overview and Units
     Help System and Documentation

Weight Estimation
     Empty Weight
     Useful Load

Weight & CG
     Weight, CG and Moment of Inertia
     Empty Weight, Minimum Weight and Discretionary Weight

Envelope of Loads
     Weight and CG Envelope
     Aft, Forward and Minimum Weight

Geometry
     Wing (Aileron, Flap, Trim Tab)
     Horizontal Tail (Elevator, Trim Tab)
     Vertical Tail (Rudder, Trim Tab)
     Plot

Structural Speeds
     Design Speed
     Load Factor
     Mach Number

Mach Limitations
     Operating Speed Limit
     Cruise, Never Exceed, Maximum Dive and Flutter Clearance Speeds

Aero Coefficients
     Cruise, Landing and Enroute Configurations
     Spanwise Lift Coefficient
     Wing CL, CD and CM
     Wing Stall CL and Corresponding Angle of Attack

Flight Loads
     Cruise, Landing and Enroute Configurations
     V-N Combinations for All 4 CG Configurations at the Corresponding Altitudes
     Corresponding Angle Of Attack, Lift Coefficient, Mach Number, Pitching Moment (Wing & Fuselage), Wing Lift, Tail Lift and Airplane Drag

Select Critical Loads
    Critical Wing Load Cases
    Critical Horizontal Tail Load Cases
    Critical Vertical Tail Load Cases
    Critical Fuselage Load Cases

Tail Load Distribution
    Horizontal Tail Loads Distributed on Average Chord
    Vertical Tail Loads Distributed on Average Chord
    Horizontal Tail Loads Distributed on Stations
    Vertical Tail Loads Distributed on Stations

Air Loads
    Cruise, Landing and Enroute Configurations
    Spanwise Lift, Drag and Pitching Moment
    Shear Forces in X And Z and the Moments about X, Y and Z Axis

Wing Inertia
    Combined Torque Due to Vertical Nz and Unbalanced Moment
    Shear Forces in X and Z
    Moments about X, Y and Z Axis

Net Loads
    Summation of Air Loads and Wing Inertial Loads
    Export

Aileron Loads
    Pressure
    Distribution

Flap Loads
    Pressure
    Distribution

Tab Loads
    Pressure
    Distribution

Engine Mount Loads
    Inertial loads (Vertical and Side)
    Gyroscopic loads
    Propeller Loads

One Engine Out Loads
    Engine Thrust and Windmill Drag Forces
    Time Integration History

Rudder Load

Landing Load Factor
        Airplane Load Factor
        Landing Gear Factor

Landing Loads
        Landing Gear Deflection Configurations
        CG Configurations
        Vertical, Drag and Side Forces on the Nose and Main Gears

Examples (6 Seater or 10 Seater)