

Module 8

Basic Aerodynamics

	Level		
	A	B1	B2
8.1 Physics of the Atmosphere	A	B1	B2
International Standard Atmosphere (ISA), application to aerodynamics.	1	2	2
8.2 Aerodynamics	A	B1	B2
Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.	1	2	2
8.3 Theory of Flight	A	B1	B2
Relationship between lift weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.	1	2	2
8. 4 Flight Stability and Dynamics	A	B1	B2
Longitudinal, lateral and directional stability (active and passive).	1	2	2

