

MODULE 8 – BASIC AERODYNAMICS

Sl. No.	Topics to be Covered	Level
		B2
8.1.	PHYSICS OF THE ATMOSPHERE	
a.	International Standard Atmosphere (ISA), application to aerodynamics.	2
8.2.	AERODYNAMICS	
a.	Airflow around a body;	2
b.	Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, up wash and downwash, vortices, stagnation	
c.	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;	
d.	Thrust, Weight, Aerodynamic Resultant;	
e.	Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall;	
f.	Aerofoil contamination including ice, snow, frost.	
8.3.	THEORY OF FLIGHT	
a.	Relationship between lift, weight, thrust and drag;	2
b.	Glide ratio;	
c.	Steady state flights, performance;	
d.	Theory of the turn;	
e.	Influence of load factor: stall, flight envelope and structural limitations;	
f.	Lift augmentation.	
8.4.	FLIGHT STABILITY AND DYNAMICS	
a.	Longitudinal, lateral and directional stability (active and passive).	2