SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE PPL(A) AND PPL(H)

AMC1 FCL.210; FCL.215

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	METEOROLOGY				
	THE ATMOSPHERE				
	Composition, extent, vertical division				
	Structure of the atmosphere	X		X	
	Troposphere	X		X	
	Air temperature				
	Definition and units	X		X	
	Vertical distribution of temperature	X		X	
	Transfer of heat	X		X	
	Lapse rates, stability and instability	X		X	
	Development of inversions, types of inversions	X		X	
	Temperature near the earth's surface, surface effects, diurnal and seasonal variation, effect of clouds, effect of wind	X		X	
	Atmospheric pressure				
	Barometric pressure, isobars	X		X	
	Pressure variation with height	X		X	
	Reduction of pressure to mean sea level	X		X	
	Relationship between surface pressure centres and pressure centres aloft	X		X	
	Air density				
	Relationship between pressure, temperature and density	X		X	
	ICAO Standard Atmosphere (ISA)				
	ICAO Standard Atmosphere	X		X	
	Altimetry				
	Terminology and definitions	X		X	
	Altimeter and altimeter settings	X		X	
	Calculations	X		X	
	Effect of accelerated airflow due to topography	X		X	
	WIND				
	Definition and measurement of wind				
	Definition and measurement	X		X	
	Primary cause of wind				
	Primary cause of wind, pressure gradient, Coriolis force, gradient wind	X		X	
	Variation of wind in the friction layer	X		X	
	Effects of convergence and divergence	x		x	

	General global circulation				
	General circulation around the globe	X		X	
	Local winds				
	Anabatic and katabatic winds, mountain and valley winds, Venturi effects, land and sea breezes	X		X	
	Mountain waves (standing waves, lee waves)				
	Origin and characteristics	X		X	
	Turbulence				
	Description and types of turbulence	X		X	
	Formation and location of turbulence	X		X	
	THERMODYNAMICS				
	Humidity				
	Water vapour in the atmosphere	X		X	
	Mixing ratio	X		X	
	Temperature/dew point, relative humidity	X		X	
	Change of state of aggregation				
	Condensation, evaporation, sublimation, freezing and melting, latent heat	X		X	
	Adiabatic processes				
	Adiabatic processes, stability of the atmosphere	X		X	
	CLOUDS AND FOG				
	Cloud formation and description				
	Cooling by adiabatic expansion and by advection	X		X	
	Cloud types and cloud classification	X		X	
	Influence of inversions on cloud development	X		X	
	Fog, mist, haze				
	General aspects	X		X	
	Radiation fog	X		X	
	Advection fog	X		X	
	Steaming fog	X		X	
	Frontal fog	X		X	
	Orographic fog (hill fog)	X		X	
	PRECIPITATION				
	Development of precipitation				
	Processes of development of precipitation	X		X	
	Types of precipitation				
	Types of precipitation, relationship with cloud types	X		X	
	AIR MASSES AND FRONTS				
	Air masses				
	Description, classification and source regions of air masses	X		X	
	Modifications of air masses	X		X	
	Fronts				

	General aspects	X		X	
	Warm front, associated clouds and weather	X		X	
	Cold front, associated clouds and weather	X		X	
	Warm sector, associated clouds and weather	X		X	
	Weather behind the cold front	X		X	
	Occlusions, associated clouds and weather	X		X	
	Stationary front, associated clouds and weather	X		X	
	Movement of fronts and pressure systems, life cycle	X		X	
	Changes of meteorological elements at a frontal wave	X		X	
	PRESSURE SYSTEMS				
	Anticyclone				
	Anticyclones, types, general properties, cold and warm anticyclones, ridges and wedges, subsidence	X		X	
	Non frontal depressions				
	Thermal-, orographic-, polar depressions, troughs	X		X	
	CLIMATOLOGY				
	Climatic zones				
	General seasonal circulation in the troposphere	X		X	
	Typical weather situations in the mid-latitudes				
	Westerly situation	X		X	
	High pressure area	X		X	
	Flat pressure pattern	X		X	
	Local winds and associated weather				
	e.g. Foehn	X		X	
	FLIGHT HAZARDS				
	Icing				
	Conditions for ice accretion	X		X	
	Types of ice accretion	X		X	
	Hazards of ice accretion, avoidance	X		X	
	Turbulence				
	Effects on flight, avoidance	X		X	
	Wind shear				
	Definition of wind shear	X		X	
	Weather conditions for wind shear	X		X	
	Effects on flight, avoidance	X		X	
	Thunderstorms				
	Conditions for and process of development, forecast, location, type specification	X		X	
	Structure of thunderstorms, life history, squall lines, electricity in the atmosphere, static charges	X		X	
	Electrical discharges	X		X	
	Development and effects of downbursts	X		X	
	Thunderstorm avoidance	X		X	
	Inversions				

	Influence on aircraft performance	X		X	
	Hazards in mountainous areas				
	Influence of terrain on clouds and precipitation, frontal passage	X		X	
	Vertical movements, mountain waves, wind shear, turbulence, ice accretion	X		X	
	Development and effect of valley inversions	X		X	
	Visibility reducing phenomena				
	Reduction of visibility caused by precipitation and obscuration	X		X	
	Reduction of visibility caused by other phenomena	X		X	
	METEOROLOGICAL INFORMATION				
	Observation				
	Surface observations	X		X	
	Radiosonde observations	X		X	
	Satellite observations	X		X	
	Weather radar observations	X		X	
	Aircraft observations and reporting	X		X	
	Weather charts				
	Significant weather charts	X		X	
	Surface charts	X		X	
	Information for flight planning				
	Aviation weather messages	X		X	
	Meteorological broadcasts for aviation	X		X	
	Use of meteorological documents	X		X	
	Meteorological warnings	X		X	
	Meteorological services				
	World area forecast system and meteorological offices	X		X	