

Private Pilot Licence Examinations – 050 Meteorology Aeroplane and Helicopter

Syllabus Reference	Syllabus details & Associated Learning Objective	Aeroplane		Helicopter	
		PPL	Bridge Course	PPL	Bridge Course
050.00.00.00	METEOROLOGY				
050.01.00.00	The atmosphere				
050.01.01.00	Composition, extent and vertical division				
050.01.01.01	Structure of the atmosphere	x		x	
050.01.01.02	Troposphere	x		x	
050.01.02.00	Air temperature				
050.01.02.01	Definition and units	x		x	
050.01.02.02	Vertical distribution of temperature Transfer of heat	x		x	
050.01.02.03	Lapse rates, stability and instability	x		x	
050.01.02.04	Development of inversions and types of inversions	x		x	
050.01.02.05	Temperature near the earth's surface, surface effects, diurnal and seasonal variation, effect of clouds and effect of wind	x		x	
050.01.03.00	Atmospheric pressure				
050.01.03.01	Barometric pressure and isobars	x		x	
050.01.03.02	Pressure variation with height	x		x	
050.01.03.03	Reduction of pressure to mean sea level	x		x	
050.01.03.04	Relationship between surface pressure centres and pressure centres aloft	x		x	
050.01.04.00	Air density				
050.01.04.01	Relationship between pressure, temperature and density	x		x	
050.01.04.02	ISA	x		x	
050.02.00.00	ICAO standard atmosphere	x		x	
050.02.01.00	Altimetry				
050.02.01.01	Terminology and definitions	x		x	
050.02.01.02	Altimeter and altimeter settings	x		x	
050.02.01.03	Calculations	x		x	
050.02.01.04	Effect of accelerated airflow due to topography	x		x	
050.03.00.00	Wind				
050.03.01.00	Definition and measurement of wind				
050.03.01.01	Definition and measurement	x		x	
050.03.02.00	Primary cause of wind				
050.03.02.01	Primary cause of wind, pressure gradient, coriolis force and gradient wind	x		x	
050.03.02.02	Variation of wind in the friction layer	x		x	
050.03.02.03	Effects of convergence and divergence	x		x	
050.03.03.00	General global circulation				
050.03.03.01	General circulation around the globe	x		x	
050.03.04.00	Local winds				
050.03.04.01	Anabatic and katabatic winds, mountain and valley winds, Venturi effects, land and sea breezes	x		x	
050.03.05.00	Mountain waves (standing waves, lee waves)				
050.03.05.01	Origin and characteristics	x		x	
050.03.06.00	Turbulence				
050.03.06.01	Description and types of turbulence	x		x	

050.03.06.02	Formation and location of turbulence	X		X	
050.04.00.00	THERMODYNAMICS				
050.04.01.00	Humidity				
050.04.01.01	Water vapour in the atmosphere	X		X	
050.04.01.02	Mixing ratio	X		X	
050.04.01.03	Temperature/dew point, relative humidity	X		X	
050.04.02.00	Change of state of aggregation				
050.04.02.01	Condensation, evaporation, sublimation, freezing and melting, latent heat	X		X	
050.04.03.00	Adiabatic processes				
050.04.03.01	Adiabatic processes, stability of the atmosphere	X		X	
050.05.00.00	CLOUDS AND FOG				
050.05.01.00	Cloud formation and description				
050.05.01.01	Cooling by adiabatic expansion and by advection	X		X	
050.05.01.02	Cloud types and cloud classification	X		X	
050.05.01.03	Influence of inversions on cloud development	X		X	
050.05.02.00	Fog, mist, haze				
050.05.02.01	General aspects	X		X	
050.05.02.02	Radiation fog	X		X	
050.05.02.03	Advection fog	X		X	
050.05.02.04	Steaming fog	X		X	
050.05.02.05	Frontal fog	X		X	
050.05.02.06	Orographic fog (hill fog)	X		X	
050.06.00.00	PRECIPITATION				
050.06.01.00	Development of precipitation				
050.06.01.01	Processes of development of precipitation	X		X	
050.06.02.00	Types of precipitation				
050.06.02.01	Types of precipitation, relationship with cloud types	X		X	
050.07.00.00	AIR MASSES AND FRONTS				
050.07.01.00	Air masses				
050.07.01.01	Description, classification and source regions of air masses	X		X	
050.07.01.02	Modifications of air masses	X		X	
050.07.02.00	Fronts				
050.07.02.01	General aspects	X		X	
050.07.02.02	Warm front, associated clouds and weather	X		X	
050.07.02.03	Cold front, associated clouds and weather	X		X	
050.07.02.04	Warm sector, associated clouds and weather	X		X	
050.07.02.05	Weather behind the cold front	X		X	
050.07.02.06	Occlusions, associated clouds and weather	X		X	
050.07.02.07	Stationary front, associated clouds and weather	X		X	
050.07.02.08	Movement of fronts and pressure systems, life cycle	X		X	
050.07.02.09	Changes of meteorological elements at a frontal wave	X		X	
050.08.00.00	PRESSURE SYSTEMS				
050.08.01.00	Anticyclone				
050.08.01.01	Anticyclones, types, general properties, cold and warm anticyclones, ridges and wedges, subsidence	X		X	
050.08.02.00	Non frontal depressions				
050.08.02.01	Thermal-, orographic-, polar depressions, troughs	X		X	
050.09.00.00	CLIMATOLOGY				
050.09.01.00	Climatic zones				
050.09.01.01	General seasonal circulation in the troposphere	X		X	
050.09.02.00	Typical weather situations in the mid-latitudes				
050.09.02.01	Westerly situation	X		X	

050.09.02.02	High pressure area	X		X	
050.09.02.03	Flat pressure pattern	X		X	
050.09.03.00	Local winds and associated weather				
050.09.03.01	e.g. Foehn	X		X	
050.10.00.00	FLIGHT HAZARDS				
050.10.01.00	Icing				
050.10.01.01	Conditions for ice accretion	X		X	
050.10.01.02	Types of ice accretion	X		X	
050.10.01.03	Hazards of ice accretion, avoidance	X		X	
050.10.02.00	Turbulence				
050.10.02.01	Effects on flight, avoidance	X		X	
050.10.03.00	Wind shear				
050.10.03.01	Definition of wind shear	X		X	
050.10.03.02	Weather conditions for wind shear	X		X	
050.10.03.03	Effects on flight, avoidance	X		X	
050.10.04.00	Thunderstorms				
050.10.04.01	Conditions for and process of development, forecast, location, type specification	X		X	
050.10.04.02	Structure of thunderstorms, life history, squall lines, electricity in the atmosphere, static charges	X		X	
050.10.04.03	Electrical discharges	X		X	
050.10.04.04	Development and effects of downbursts	X		X	
050.10.04.05	Thunderstorm avoidance	X		X	
050.10.05.00	Inversions				
050.10.05.01	Influence on aircraft performance	X		X	
050.10.06.00	Hazards in mountainous areas				
050.10.06.01	Influence of terrain on clouds and precipitation, frontal passage	X		X	
050.10.06.02	Vertical movements, mountain waves, wind shear, turbulence, ice accretion	X		X	
050.10.06.03	Development and effect of valley inversions	X		X	
050.10.07.00	Visibility reducing phenomena				
050.10.07.01	Reduction of visibility caused by precipitation and obscuration	X		X	
050.10.07.02	Reduction of visibility caused by other phenomena	X		X	
050.11.00.00	METEOROLOGICAL INFORMATION				
050.11.01.00	Observation				
050.11.01.01	Surface observations	X		X	
050.11.01.02	Radiosonde observations	X		X	
050.11.01.03	Satellite observations	X		X	
050.11.01.04	Weather radar observations	X		X	
050.11.01.05	Aircraft observations and reporting	X		X	
050.11.02.00	Weather charts				
050.11.02.01	Significant weather charts	X		X	
050.11.02.02	Surface charts	X		X	
050.11.03.00	Information for flight planning				
050.11.03.01	Aviation weather messages	X		X	
050.11.03.02	Meteorological broadcasts for aviation	X		X	
050.11.03.03	Use of meteorological documents	X		X	
050.11.03.04	Meteorological warnings	X		X	
050.11.04.00	Meteorological services				
050.11.04.01	World area forecast system and meteorological offices	X		X	