

NPPL to PPL (A) Bridging Examinations
020 Aircraft General Knowledge Learning Objectives

Syllabus Reference	Syllabus details & Associated Learning Objective	NPPL to PPL (A)
021.00.00.00	AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT AND EMERGENCY EQUIPMENT	
021.01.00.00	System design, loads, stresses, maintenance	
021.01.01.00	Loads and combination loadings applied to an aircraft's structure	x
021.02.-00.00	Airframe	
021.02.01.00	Wings, tail surfaces and control surfaces	
021.02.01.01	Design and constructions	x
021.02.01.02	Structural components and materials	x
021.02.01.03	Stresses	x
021.02.01.04	Structural limitations	x
021.02.02.00	Fuselage, doors, floor, wind-screen and windows	
021.02.02.01	Design and constructions	x
021.02.02.02	Structural components and materials	x
021.02.02.03	Stresses	x
021.02.02.04	Structural limitations	x
	Hydraulics	
021.03.00.00	Hydromechanics: basic principles	x
021.03.01.00	Hydraulic systems	x
021.03.01.01	Hydraulic fluids: types and characteristics, limitations	x
021.03.01.02	System components: design, operation, degraded modes of operation, indications and warnings	x
021.04.00.00	Landing gear, wheels, tyres and brakes	
021.04.01.00	Landing gear	
021.04.01.01	Types and materials	x
021.04.02.00	Nose wheel steering: design and operation	
021.04.03.00	Brakes	
021.04.03.01	Types and materials	x
021.04.03.02	System components: design, operation, indications and warnings	x
021.04.04.00	Wheels and tyres	
021.04.04.01	Types and operational limitations	x
021.06.02.00	Secondary flight controls	
021.06.02.01	System components: design, operation, degraded modes of operation, indications and warnings	x
021.06.03.00	Anti-icing systems	
021.06.03.01	Types and operation (pitot and windshield)	x
021.07.00.00	Fuel system	
021.07.01.00	Piston engine	
021.07.01.01	System components: design, operation, degraded modes of operation, indications and warnings	x
021.08.00.00	Electrics	
021.08.01.00	Electrics: general and definitions	
021.08.01.01	Direct current: voltage, current, resistance, conductivity, Ohm's law, power and work	x
021.08.01.02	Alternating current: voltage, current, amplitude, phase, frequency and resistance	x
021.08.01.03	Circuits: series and parallel	x
021.08.01.04	Magnetic field: effects in an electrical circuit	x

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021.08.02.00	Batteries	
021.08.02.01	Types, characteristics and limitations	x
021.08.02.02	Battery chargers, characteristics and limitations	x
021.08.03.00	Static electricity: general	
021.08.03.01	Basic principles	x
021.08.03.02	Static dischargers	x
021.08.03.03	Protection against interference	x
021.08.03.04	Lightning effects	x
021.08.04.00	Generation: production, distribution and use	
021.08.04.01	DC generation: types, design, operation, degraded modes of operation, indications and warnings	x
021.08.04.02	AC generation: types, design, operation, degraded modes of operation, indications and warnings	x
021.08.05.00	Electric components	
021.08.05.01	Basic elements: basic principles of switches, circuit breakers and relays	x
021.08.06.00	Distribution	
021.08.06.01	General:	x
	(a) bus bar, common earth and priority;	x
	(b) AC and DC comparison.	x
021.09.00.00	Piston engines	
021.09.01.00	General	
021.09.01.01	Types of internal combustion engine: basic principles and definitions	x
021.09.01.02	Engine: design, operation, components and materials	x
021.09.02.00	Fuel	
021.09.02.01	Types, grades, characteristics and limitations	x
021.09.02.02	Alternate fuel: characteristics and limitations	x
021.09.03.00	Carburettor or injection system	
021.09.03.01	Carburettor: design, operation, degraded modes of operation, indications and warnings	x
021.09.03.02	Injection: design, operation, degraded modes of operation, indications and warnings	x
021.09.03.03	Icing	x
021.09.04.00	Air cooling systems	
021.09.04.01	Design, operation, degraded modes of operation, indications and warnings	x
021.09.05.00	Lubrication systems	
021.09.05.01	Lubricants: types, characteristics and limitations	x
021.09.05.02	Design, operation, degraded modes of operation, indications and warnings	x
021.09.06.00	Ignition circuits	
021.09.06.01	Design, operation, degraded modes of operation	x
021.09.07.00	Mixture	
021.09.07.01	Definition, characteristic mixtures, control instruments, associated control levers and indications	x
021.09.08.00	Propellers	
021.09.08.01	Definitions and general:	x
	(a) aerodynamic parameters;	x
	(b) types;	x
	(c) operating modes.	x
021.09.08.02	Constant speed propeller: design, operation and system components	x
021.09.08.03	Propeller handling: associated control levers, degraded modes of operation, indications and warnings	x

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021.09.09.00	Performance and engine handling	
021.09.09.01	Performance: influence of engine parameters, influence of atmospheric conditions, limitations and power augmentation systems	x
021.09.09.02	Engine handling: power and mixture settings during various flight phases and operational limitations	x
	(a) design, operation and materials;	
	(b) noise reduction.	
022.00.00.00	INSTRUMENTATION	
022.01.00.00	Instrument and indication systems	
022.01.01.00	Pressure gauge	
022.01.01.01	Different types, design, operation, characteristics and accuracy	x
022.01.02.00	Temperature sensing	
022.01.02.01	Different types, design, operation, characteristics and accuracy	x
022.01.03.00	Fuel gauge	
022.01.03.01	Different types, design, operation, characteristics and accuracy	x
022.01.04.00	Flow meter	
022.01.04.01	Different types, design, operation, characteristics and accuracy	x
022.01.05.00	Position transmitter	
022.01.05.01	Different types, design, operation, characteristics and accuracy	x
022.01.07.00	Tachometer	
022.01.07.01	Design, operation, characteristics and accuracy	x
022.02.00.00	Measurement of aerodynamic parameters	
022.02.01.00	Pressure measurement	
022.02.01.01	Static pressure, dynamic pressure, density and definitions	x
022.02.01.02	Design, operation, errors and accuracy	x
022.02.02.00	Temperature measurement: aeroplane	
022.02.02.01	Design, operation, errors and accuracy	x
022.02.02.02	Displays	x
022.02.04.00	Altimeter	
022.02.04.01	Standard atmosphere	x
022.02.04.02	The different barometric references (QNH, QFE and 1013.25)	x
022.02.04.03	Height, indicated altitude, true altitude, pressure altitude and density altitude	x
022.02.04.04	Design, operation, errors and accuracy	x
022.02.04.05	Displays	x
022.02.05.00	Vertical speed indicator	
022.02.05.01	Design, operation, errors and accuracy	x
022.02.05.02	Displays	x
022.02.06.00	Air speed indicator	
022.02.06.01	The different speeds IAS, CAS, TAS: definition, usage and relationships	x
022.02.06.02	Design, operation, errors and accuracy	x
022.02.06.03	Displays	x

Syllabus Reference	Syllabus details & Associated Learning Objective	NPPL to PPL (A)
	Magnetism: direct reading compass	
022.03.00.00	Earth magnetic field	x
022.03.01.00	Direct reading compass	
022.03.01.01	Design, operation, data processing, accuracy and deviation	x
022.03.01.02	Turning and acceleration errors	x
022.04.00.00	Gyroscopic instruments	
022.04.01.00	Gyroscope: basic principles	
022.04.01.01	Definitions and design	x
022.04.01.02	Fundamental properties	x
022.04.01.03	Drifts	x
022.04.02.00	Turn and bank indicator	
022.04.02.01	Design, operation and errors	x
022.04.03.00	Attitude indicator	
022.04.03.01	Design, operation, errors and accuracy	x
022.04.04.00	Directional gyroscope	
022.04.04.01	Design, operation, errors and accuracy	x
022.05.00.00	Communication systems	
022.05.01.00	Transmission modes: VHF, HF and SATCOM	
022.05.01.01	Principles, bandwidth, operational limitations and use	x
022.05.02.00	Voice communication	
022.05.02.01	Definitions, general and applications	x
022.06.00.00	Alerting systems and proximity systems	
022.06.01.00	Flight warning systems	
022.06.01.01	Design, operation, indications and alarms	x
022.06.02.00	Stall warning	
022.06.02.01	Design, operation, indications and alarms	x
022.07.00.00	Integrated instruments: electronic displays	
022.07.01.00	Display units	
022.07.01.01	Design, different technologies and limitations	x