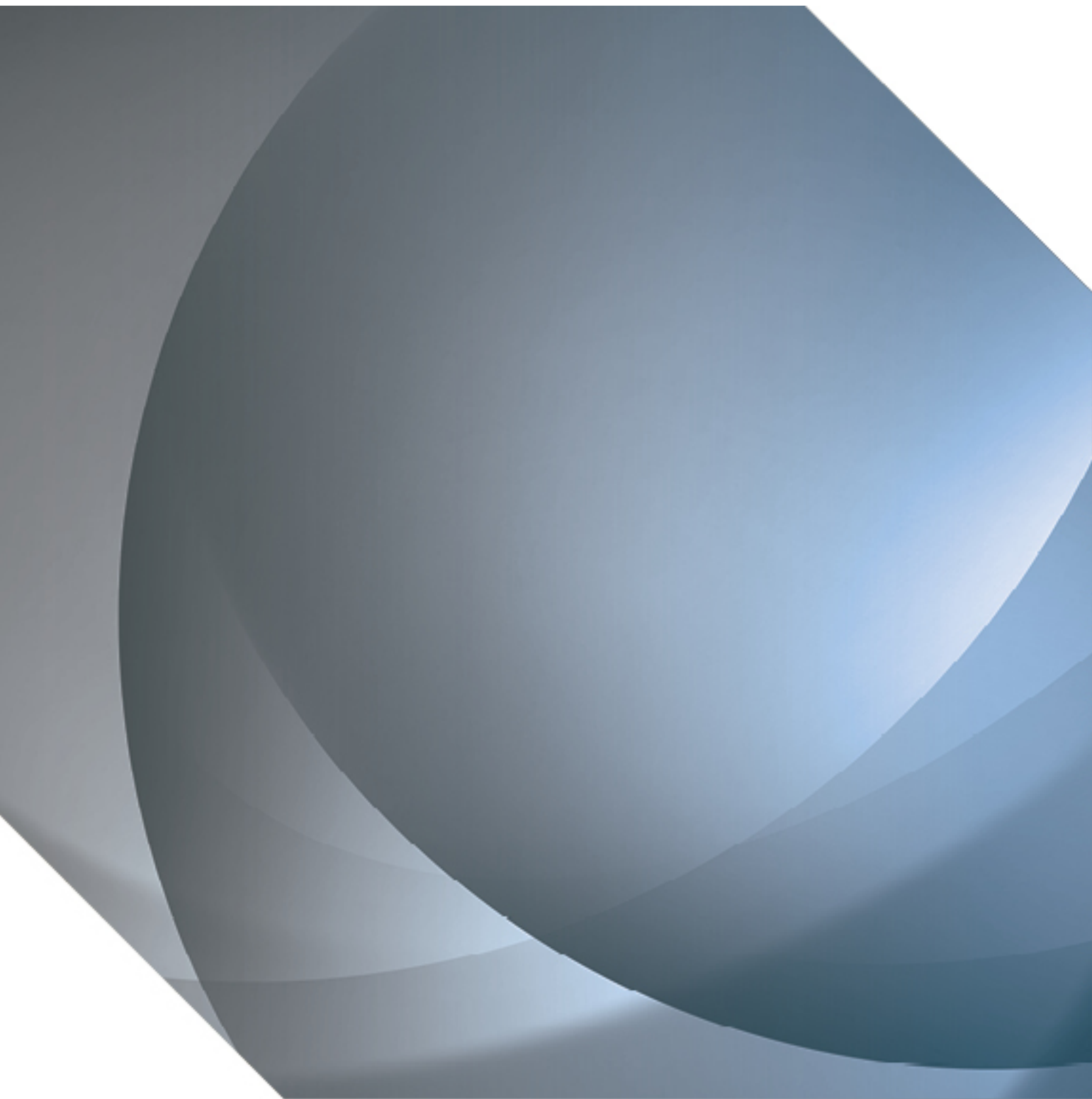


Alternative Means of Compliance 1 FCL.210; FCL.215 Syllabus of Theoretical Knowledge and Flight Training for the PPL(A)

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Background

The creation of a dedicated GA Unit within the CAA emerged from the Government's Red Tape Challenge in 2013, which explored ways to reduce the regulatory burden on the general aviation sector. The 25-strong Unit has been assembled from airworthiness, flight operations and licensing specialists from across the CAA. All have significant knowledge and experience of general aviation, with most being active private pilots. The Unit is based in the CAA's Aviation House facility in Gatwick.

Introduction

- 1.1 In 2014 the General Aviation Unit of the UK CAA established a working group to review the flight and theoretical knowledge training syllabi for the EU LAPL and PPL(A) published in AMC 1 FCL.110.A and AMC 1 FCL.210.A respectively.
- 1.2 The working group made up of representative associations and professional training organisations reviewed the existing syllabi, identifying areas to remove, clarify and update additionally items to add into the new syllabi. This was reviewed and a formal Alternative Means of Compliance (AltMOC) was submitted to EASA.
- 1.3 This document sets out the changes submitted to the Agency to the flight training and theoretical knowledge syllabus for the EU PPL(A).

Guidance to Training Organisations or Facilities

- 1.4 The flight and theoretical knowledge training should cover all aspects in an integrated manner, taking into account the particular risks associated with the activity.
- 1.5 Any theoretical knowledge instruction provided by the training organisation or facility may include elements of classroom work, using such facilities as interactive video, slide or tape presentation, computer based training and other media distance learning tools to provide the training courses.
- 1.6 The training organisation or facility responsible for the training must ensure that all of the elements of both the theoretical knowledge and flight training have been completed to the required standard before recommending the applicant for an examination or skill test.
- 1.7 This document details the Alternative Means of Compliance, training organisations and facilities can chose to adopt for the PPL(A) course. They can also continue to follow the existing Acceptable Means of Compliance detail in AMC1 FCL.210.A.
- 1.8 It is the intension of the CAA to establish a new set of LAPL and PPL examinations for this new syllabi.

Theoretical Knowledge Syllabus

- 1.9 The following tables contain the syllabus for the course of theoretical knowledge for the PPL(A).

AltMoC 1 FCL.210; FCL.215 – Syllabus of Theoretical Knowledge for the PPL(A).

[illegible]

[illegible]

		Aeroplane	
	The International Standard Atmosphere (ISA)		
	Altimetry Altimeter and pressure settings Altimeter temperature and pressure effects	X	
	Wind Cause of wind Variation of wind velocity with altitude Local winds	X	
	Clouds and Precipitation Formation of cloud Principle cloud types Precipitation	X	
	Visibility Fog and mist Haze and smoke Visibility in precipitation	X	
	Air Masses Characteristics of air masses	X	
	Low Pressure Systems The warm sector depression The warm front The cold front Occluded fronts Troughs and convergence	X	
	High Pressure Systems Anticyclones Ridges Cols	X	
	Hazardous Weather Conditions: Icing Airframe icing Rain ice Frost Piston engine icing	X	
	Hazardous Weather Conditions: Thunderstorms Formation of thunderstorms Hazards for aircraft	X	
	Other Hazardous Weather Conditions: Mountainous areas Turbulence Wind shear Strong winds	X	
	Meteorological Information Synoptic charts Satellite imagery Ground based weather radar Area and significant weather forecasts TAFs and METARs Sources of meteorological information	X	

		Aeroplane	
	Forecast and observation parameters and tolerances National Procedures National procedures	X	
4	Communications VHF Radio Broadcast Factors affecting VHF radio range Transmission Technique Transmission of letters Transmission of numbers Transmission of time Call signs VFR Communications Procedures Test procedures Standard phraseology Items requiring read back Transfer of communications Transponder operating procedures Weather Information ATIS & VOLMET broadcasts, Flight Information Service (FIS) Communications Failure Actions in the event of communication failure Distress and Urgency Procedures Emergency frequencies and facilities Urgency procedures Distress procedures National Procedures National rules and procedures	X X X X X X X	
5	Principles of Flight Basic Concepts Static and dynamic pressure Aerodynamic forces Aerofoils and wings The Four Forces Weight Thrust Lift Drag The Stall Stalling angle of attack Factors affecting stall characteristics Factors affecting stalling speed Stall warning Spin avoidance Spinning characteristics	X X X X	X X X

[illegible]

		Aeroplane	
	Mass and Balance Mass limitations Calculation of aircraft mass Centre of gravity limitations Calculation of centre of gravity	X	X
	Performance - Take-Off and Climb Factors affecting take-off and climb performance Calculation of take-off and climb performance	X	X
	Performance - Cruise Principles of endurance and range Factors affecting cruise performance Calculation of cruise performance	X	X
	Performance - Descent and Landing Factors affecting descent and landing performance Calculation of descent and landing performance	X	X
	VFR Flight Planning Route selection Communication and radio navigation selection Completion of the navigation plan The Aeronautical Information Publication (AIP) NOTAMS Obtaining meteorological information International flight	X	X
	Fuel Planning Fuel required calculation	X	X
	ICAO (ATS) Flight Plan Requirement to File ICAO (ATS) Flight plan Submission of the ICAO (ATS) Flight plan	X	X
	National Procedures National rules and procedures	X	X
	8 Aircraft General Knowledge		
	The Airframe Airframe design and construction Serviceability checks	X	X
	Flying Controls Flying control design and construction Serviceability checks	X	X
	Undercarriage Undercarriage design and construction Tyres and brakes Serviceability checks	X	X
	Piston Engines Principles of operation Piston engine design and components	X	X

		Aeroplane	
	Serviceability checks		
	Piston Engine Systems	X	X
	Fuel system		
	Induction system		
	Ignition system		
	Oil system		
	Cooling system		
	Other engine systems		
	The Propeller	X	X
	Principles of operation		
	Propeller design and components		
	Propeller handling		
	Serviceability checks		
	Engine Handling	X	X
	Engine limitations		
	Engine handling		
	The Electrical System	X	X
	Principles of operation		
	Electrical system design and components		
	Instruments and Systems	X	X
	The pitot static system		
	The altimeter		
	The vertical speed indicator		
	The air speed indicator		
	The suction system		
	Attitude indicator		
	Heading indicator		
	The turn indicator / turn co-ordinator		
	The compass		
	Other instrumentation		
	Integrated electronic displays		
	Avionics Systems	X	X
	Communications Equipment		
	SSR		
	ADF		
	VOR		
	DME		
	GNSS		
	Integrated Electronic Displays		
	Cockpit Equipment and Systems	X	X
	Doors, windows and exits		
	Seats		
	Seat belts and harnesses		
	Cockpit heating and ventilation systems		
	Emergency Equipment	X	X
	First aid kit		
	Fire extinguishers		
	ELT/PLB		
	Lifejackets and life rafts		
	Other survival equipment		

		Aeroplane	
	Aircraft Airworthiness Aircraft registration Airworthiness Certificate, Permit to Fly Aeroplane Flight Manual/Pilot Operating Handbook Aircraft maintenance and serviceability Maintenance and serviceability documentation Converting Onto a Another Aircraft Type Practical considerations when converting onto a different aircraft and/or variants National Procedures National rules and procedures	X X X X	X X X X
9	Navigation Form of the Earth Latitude and Longitude Measurement of Direction True direction Magnetic direction Compass direction Measurement of Distance Units of distance Conversion of units Measurement of Airspeed Calculation of true airspeed Triangle of Velocities Calculating heading and groundspeed In-flight VFR Navigation: Dead Reckoning and Map Reading Principles of dead reckoning Time and distance Map reading In-flight VFR Navigation: Off-track and Diversion Off track correction ETA revision Diversion Alternate airfields In-flight VFR Navigation: Vertical Navigation Safety altitudes Vertical navigation Altimeter settings In-flight VFR Navigation: Controlled and Notified Airspace Procedures in the vicinity of controlled and notified	X X X X X X X X X	

		Aeroplane	
	airspace Procedures within controlled and notified airspace Airspace infringement		
	Time UTC Time Zones Sunrise and sunset information	X	
	VFR Radio Navigation Integrating radio navigation with VFR navigation VDF – Operation and interpretation, limitations and accuracy ATC Radar – Operation and interpretation, limitations and accuracy ADF – Operation and interpretation, limitations and accuracy VOR – Operation and interpretation, limitations and accuracy DME – Operation and interpretation, limitations and accuracy GNSS – operation and interpretation, limitations and accuracy	X	

Flight Training Syllabus

AltMoC1 FCL.210.A PPL(A) - Experience requirements and crediting

Flight Instruction for the PPL(A)

Entry to training

Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

Flight instruction

1. The PPL(A) flight instruction syllabus takes into account the principles of threat and error management.
2. Before authorising the applicant for a PPL(A) to undertake his/her first solo flight, the FI should ensure that the applicant can operate the required systems and equipment and is proficient in the use of R/T communication.
3. Use of Basic Instrument Training Devices (BITD) (and higher level simulators) -
 - a) A BITD may be used for flight training for:
 - i. flight by reference solely to instruments;
 - ii. navigation using radio navigation aids;
 - iii. basic instrument flight.
 - b) The use of the BITD should be subject to the following:
 - i. the training should be complemented by exercises in an aeroplane;
 - ii. the record of the parameters of the BITD flight must be maintained;
 - iii. an FI(A) or STI(A) should provide the instruction.

Syllabus of flight instruction

1. The numbering of exercises should be used primarily as a reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be carried out in the order listed. The actual order and content will depend upon the following interrelated factors:
 - a) the applicant's progress and ability;
 - b) the weather conditions affecting the flight;
 - c) the flight time available;
 - d) instructional technique considerations;
 - e) the local operating environment;
 - f) applicability of the exercises to the aeroplane or TMG type.

2. The need for the applicant to practice good airmanship and maintain a good look-out, should be emphasised throughout.

Exercise 1a Aeroplane or TMG Familiarisation

- Aircraft construction and characteristics
- Normal exits
- Cockpit layout
- Aircraft systems
- Use of the checklist and Pilot Operating Handbook/ Aircraft Flight Manual

Exercise 1e Emergency and Abnormal Procedures

- Fire on the ground
- Cockpit fire in the air
- Engine fire in the air
- Systems failures
- Emergency equipment and drills, emergency exits

Exercise 2 Preparations for flight and actions after flight

- Personal preparation
- Flying equipment required
- Weather forecasts and actual reports
- NOTAMs and AIS information
- Flight authorisation, aircraft serviceability and acceptance
- Booking-out procedures
- Airfield sense
- Refuelling procedures
- External checks
- Internal checks
- Seat, harness and rudder adjustment
- Starting
- Power and pre take off checks
- Local procedures
- Closing down checks
- Parking, moving, security and tie down

Exercise 3 The Air Experience Flight

- The air experience flight

Exercise 4 Effects of Controls

- Primary effects of the flying controls
- Further effects of the flying controls
- Effect of air speed
- Effect of propeller slipstream
- Effect of power
- Effect of trimming controls
- Effect of flaps
- Effect of other controls (as applicable)
- Operation of the carburettor heat control (as applicable)
- Operation of the mixture control (as applicable)
- Operation of the cockpit heating and ventilation controls (as applicable)
- Operation of other controls (as applicable)

Exercise 5a Taxiing

- Pre taxi checks
- Moving off, speed control and stopping
- Engine handling
- Control of direction
- Parking area procedures, taxiing in confined spaces
- Effect of wind and use of the flying controls
- Effects of ground surface
- Rudder check
- Instrument checks
- Apron and manoeuvring area markings
- Marshalling signals
- ATC procedures

Exercise 5e Taxiing Emergency and Abnormal procedures

- Steering failure
- Brake failure
- Emergency stop

Exercise 6 Straight and level flight

- Lookout technique
- Attaining and maintaining straight and level flight
- Demonstration of stability
- Straight and level flight at an increased airspeed
- Straight and level flight at a decreased airspeed
- Maintaining straight and level flight during configuration changes

Exercise 7 Climbing

- Entering the climb
- Maintaining the climb
- Levelling off at a selected level
- Climbing with flap extended
- The en route (cruise) climb
- Maximum angle of climb

Exercise 8 Descending

- Entering the descent
- Maintaining the descent
- Levelling off at a selected level
- Descending with flap (or spoilers, airbrakes or speedbrakes, as applicable)
- Descending with power
- Descending with flap and power
- The en route (cruise) descent
- Sideslipping
- Entering a climb from the descent (go-around)

Exercise 9 Turning

- Entering the level turn
- Maintaining the level turn
- Returning to straight flight
- The climbing turn
- The descending turn
- Turning onto selected headings

Exercise 10a Slow flight

- Safety checks
- Introduction to slow flight
- Controlled flight slowing to critically slow airspeed
- Coordinated use of controls at critically slow airspeed
- Recovery from a critically slow airspeed

Exercise 10b Stalling

- Safety checks
- Symptoms and recognition of the stall
- The clean stall and recovery without and with power
- Stall recovery during a wing drop
- The stall and recovery with power and/or flap (or spoilers, airbrakes or speedbrakes, as applicable)
- The approach to stall and recovery in the approach configuration
- The approach to stall and recovery in the landing configuration
- The approach to stall and recovery in the take-off configuration
- Stall and incipient stall and recovery in different configurations and various manoeuvres

Exercise 11 Spin avoidance

- Safety checks
- Recognition of the incipient spin
- Recovery from the incipient spin

Exercise 12a Take-Off and Climb

- Pre take-off checks
- Checks during and after take-off and climb
- Standard take off and initial climb
- Crosswind take-off
- Short field and soft field take off
- Noise abatement
- ATC procedures

Exercise 12e Emergency and Abnormal procedures

- Abandoned take off
- Engine failure after take-off

Exercise 13a Circuit, Approach and landing

- Joining the circuit
- Circuit pattern and procedures
- Pre landing checks
- Initial approach to land
- Normal (performance) landing
- Touch and go
- Effect of surface wind
- Crosswind circuit, approach and landing
- Glide approach and landing
- Flapless approach and landing
- Short field and soft field approach and landing
- Missed approach and go around
- Bad weather circuit and landing
- Noise abatement
- ATC procedures

Exercise 13e Emergency and Abnormal Procedures

- Engine failure in the circuit
- Systems failures
- Misjudged landing

Exercise 14 First Solo and solo consolidation

- First solo

During flights immediately following the solo circuit consolidation the following should be revised;

- Leaving the circuit
- Local area procedures, map reading
- Cruise checks
- Use of the compass
- Use of radio navigation aids for homing
- Re joining the circuit

Exercise 15 Advanced turning

- Entering the steep (minimum 45° angle of bank) turn
- Maintaining the steep turn
- Returning to straight and level flight
- Steep descending turn
- Approach to the stall in the turn
- Recognition of and recovery from the spiral dive
- Recovery from other unusual attitudes

Exercise 16 Forced Landing without power

- Forced landing procedure
- Assessing the surface wind
- Assessing the gliding range
- Selecting a suitable landing area
- Planning the approach path, provision for change of plan
- Cause of engine failure checks
- Use of the radio
- Comittal / pre landing checks and actions
- Final approach and landing
- Actions after landing
- In-flight engine stopping procedure (TMG only)
- In-flight engine restarting procedure (TMG only)

Exercise 17 Precautionary Landing

- Situations necessitating a precautionary landing
- Precautionary landing procedure
- Selection of landing area
- Surrounding area and landing site inspection
- Approach and landing
- Actions after landing

Exercise 18a VFR Navigation - Flight Planning

- Route selection
- Controlled and regulated (notified) airspace
- Chart selection and preparation
- Safety altitude/minimum safety altitude (MSA)
- Weather forecasts and actual reports
- Daylight (sunrise and sunset)
- Completion of the flight log, navigation calculations
- Fuel planning
- Mass and balance calculation
- Performance calculations
- Alternate airfields
- Radio frequencies
- NOTAMS and AIS information
- Aircraft documentation
- Flight notification

Exercise 18a VFR Navigation - Departure and En Route procedures

- Airfield departure procedures
- Air Traffic Service and radio procedures
- Departing non controlled aerodromes (as applicable)
- Departing controlled aerodromes and controlled (notified) airspace
- Altimeter setting procedures
- Principles of map reading
- Maintaining airspeed, altitude and heading
- Maintaining flight log
- Assessing weather en route, weather minima
- Revision of ETA and heading
- Monitoring fuel state and systems
- Turning point procedure
- Transiting controlled (notified) airspace
- Organising cockpit workload

Exercise 18a VFR Navigation - arrival procedures

- ATC and radio procedures
- Arriving at non controlled aerodromes (as applicable)
- Arriving at controlled aerodromes and controlled (notified) airspace
- Altimeter setting procedures
- Circuit joining procedures
- Parking and aircraft security
- Refuelling
- Notification of arrival, administration procedures

Exercise 18b VFR Navigation at lower levels and in Degraded Visual Environment (DVE)

- Actions before descending or entering DVE
- Appropriate aeroplane configuration
- Hazards, obstacles and terrain
- Map reading at lower level and in DVE
- Visual impressions of flight at minimum level
- Visual impressions of flight in DVE
- Effect of wind, turbulence and windshear
- Vertical situational awareness
- Weather considerations and assessing weather
- Noise sensitive areas

Exercise 18c VFR Radio Navigation

Pre flight radio navigation preparation
Integrating radio navigation into VFR navigation
Use of the Relative Bearing Indicator (RBI)*
Use of the Radio Magnetic Indicator (RMI)*
Use of the Course Deviation Indicator (CDI)*
Use of the Horizontal Situation Indicator (HSI)*
Use of the moving map display*
VDF - Air Traffic Control and radio procedures*
ATC Radar - ATC and radio procedures*
Secondary Surveillance Radar (SSR) – Transponder operation*
VOR - Selection and identification, interpretation, intercepting and maintaining a radial, position fixing or *
DME - Selection and identification, interpretation, modes of operation, position fixing or*
ADF - Selection and identification, interpretation, orientation, homing to an NDB or*
GNSS – Selection of waypoints, interpretation, orientation, error messages*

* Specific radio navigation aids as applicable depending on aircraft equipment and ATC facilities

Exercise 18e Emergency and Abnormal Procedures

Diversion procedure
Uncertain of position and lost procedures
Loss of sight of the surface
Electrical failure
Radio failure
Instrument failure
Systems failure

Exercise 19 Basic Instrument Flight

Instrument appreciation, physiological sensations
Instrument interpretation - the attitude indicator and instrument scan
Straight and level flight
The climb
The cruise descent
The turn
Recoveries from unusual attitudes

Contact details

- 1.10 Any queries or requests for further guidance by training organisations or facilities should be addressed to your allocated Licensing Standards Inspector.

Alternatively please contact:

General Aviation Unit
Civil Aviation Authority
GE, Aviation House
Gatwick Airport
RH6 0YR

Or e-mail sargga@caa.co.uk