The Honourable Company of Air Pilots

EASA PPL(A) INSTRUCTOR'S LESSON GUIDE

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Nothing in this Guide supersedes any legislation, rules, regulations or procedures contained in any operational document issued by the UK Civil Aviation Authority (CAA), the European Union through or by the European Aviation Safety Agency (EASA), ICAO, the aircraft and/or equipment manufacturer or by the aircraft operator.

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https://www.airpilots.org

Foreword

I am delighted to be able to support this useful and comprehensive document, which will be helpful to all instructors at whatever stage of their careers they may be. The Instructor sub-committee of the Education and Training Committee of the Air Pilots is to be congratulated for their persistence and painstaking efforts in seeing this project to a conclusion.

As an FIC instructor and FIE who has chaired both committees over a period of a decade, I applaud this work. It was a dream of mine to see this much-needed gap plugged. Having been steeped in instructional techniques and training of instructors for over 15 years, it is hugely satisfying to see such authoritative and well-thought out advice presented simply and usefully for others. It is also very important to note that this work has the backing and support of experienced instructors from the Central Flying School of the Royal Air Force as well as from the Civil Aviation Authority.

Of course, no two instructors will agree on every single aspect of instructional techniques, but if there is any part of this document with which you disagree vehemently, then we would be glad to hear from you. It is not envisaged that this work will remain static, but we hope that it will remain a living project, available for amendment and update as demands of the industry and the regulators evolve.
Meanwhile, it is a great pleasure to commend this document to you.

Dorothy Saul-Pooley

Immediate Past Master
The Honourable Company of Air Pilots

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Acknowledgements

The inspiration for this Guide came from the invaluable work of Sqn Ldr Malcolm Hunt RAF, a long serving member of the Instructor Sub-Committee. His sterling efforts analysing stall/spin accidents combined with a similar study by GASCO, started the chain of discussions within the Instructor Sub-Committee, which eventually led to the decision to produce this guide.

The production of this guide would not have been possible without enormous effort on the part of the Instructor Sub-Committee of the Education and Training Committee of GAPAN – now, of course known as The Honourable Company of Air Pilots.

Every member of that committee provided many hours of valuable service discussing syllabi, examining and interpreting AMCs and constructing and producing the lesson plans.

Thanks must also be given to The Central Flying School of the Royal Air Force for their substantial input through their nominated representative on the Committee and to the Civil Aviation Authority for similar assistance through their Examiner staff.

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The Honourable Company of Air Pilots – Instructor Lesson Guide

Introduction

This document has been produced to provide instructors with a guide for teaching the syllabus of training required to achieve the requirements for issue of an EASA PPL(A).

As with all other general guides, it is impossible to dictate the exact structure that the training should follow. This document provides a general framework that encompasses what is believed to be best practice and forms a coherent series of airborne lessons. These lessons will fully meet the EASA PPL(A) syllabus requirements, if followed. However, the total number of hours allocated to the lesson plans do not total the minimum 45 hours that is required to complete the PPL course. It has been left to the individual schools/instructors to determine which areas of training a particular student will require more time on, or it may be that local procedures will lengthen certain exercises.

As always, the variables of aircraft type, student ability, local airspace considerations and weather will ultimately dictate the teaching methods, the construction of each flight lesson and the exact order of events. This principle is enshrined within Acceptable Means of Compliance and Guidance Material (AMC & GM) to Part FCL AMC1 FCL.210.A PPL(A) — Experience requirements and crediting:

"Syllabus of flight instruction

The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore, the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

I. the applicant's progress and ability;
II. the weather conditions affecting the flight;
III. the flight time available;
IV. instructional technique considerations;
V. the local operating environment:
VI. the applicability of the exercises to the aeroplane."

In this Lesson Guide the lessons are based on the following assumptions:

I. The student has good aptitude and natural ability and will be conducting the training on a regular basis, possibly full-time.
II. The aircraft is a simple single engined aircraft, with a fixed pitch propeller, carburetted engine with a carb' heat control and manual mixture control, fixed undercarriage and basic avionics (Nav/Comm, VOR, ADF, transponder, DME and a basic panel mounted GPS unit).
III. The training airfield is situated outside controlled airspace with a basic ATC service available.
IV. Controlled airspace, MATZ and other suitable airfields with and without ATC/RADAR are located nearby for training purposes.

If the facilities of the actual ATO differ in any respect to the above assumptions then necessary adjustments to the lessons should be incorporated as required to provide effective training for the student.

Use of the Guide

The training programme is divided into three phases of training: the first phase provides all the fundamental flying exercises prior to teaching circuit procedures and landing. The second phase details the circuit training, first solo, solo circuit consolidation and the advanced general handling exercises. The third phase includes instrument training, navigation and skill test revision exercises. Normally, each phase of training should be completed before embarking on the next phase.

Each phase has an “Overview” which gives general advice on some aspects of the training as well as detailing the additional emergency procedures, Threat & Error Management (TEM) items and detail of the EASA PPL(A) syllabus items included within that phase of training. Instructors should consult the overview before each flight lesson and extract items from the overview to insert into the flight lesson as the situation allows.

Each individual Lesson Guide page is divided in to two. The left-hand side details the essential TEM items to be included, a guide to the ground exercises to be completed prior to flight, the airborne exercise order and, finally, any specific debriefing points to be covered post flight. The right-hand side details the competencies to be achieved by the student and can be used to form the Student Record of Training.

Threat and Error Management

The customary term “Good airmanship” is broad in scope and has served us well, but it is ill-defined and unstructured. Airmanship can be subjective and influenced by the culture and experiences of the pilot or the organisation to which they belong - good and bad. Threat & Error Management (TEM) seeks to define threats and human errors, in flight and on the ground, and how both should be managed: The TEM structure is not separate from good airmanship but part of it.

“Threats” are external factors and cannot be controlled: e.g. a thunderstorm (CB) should be avoided by all pilots at all times. Other types of cloud must be avoided by the untrained pilot but may be managed safely in IMC following training and qualification in instrument flying skills. High ground and obstructions are a threat but are avoided by adopting a safe altitude or by circumnavigation. CFIT in poor visibility and low flying “scud running” below lowering cloud continues to be a major factor in the annual fatal statistics and a result of human error.

Errors are internal factors and controllable: they result from an incorrect action or inaction by the pilot. Understanding human factors, physiological and cognitive, is crucial to safety: 80% of incidents/accidents are the result of human error. Humans make mistakes, therefore it is important that human factors are understood and strategies put in place to eliminate or at least mitigate life threatening outcomes. For example, the eye has several limitations that can be managed by training in lookout techniques. Check lists and drills can ensure that items to be monitored or actions to be followed are not forgotten, overlooked or poorly executed. Mistakes are a result of lack of skill or lack of practice in it, or of slips, complacency or bias.

The array below summarises the threats and human errors that are always present although the list should not to be taken as exhaustive. There will be other issues that are particular to your circumstances and are relevant to the local environment and aircraft in which you fly. These additional threats and risks should be identified, added to the array and assessed in accordance with the tables (those shown are found within the ATO master manual provided by the CAA: ‘converting from an RTF to ATO’); the Risk Severity table at paragraph 3.5.1.2 and the Risk Likelihood table at 3.5.2.2 are summarised by reference to the Risk Tolerability Table at paragraph 3.4.5 of the same manual. The scale to be used is ranged 1–5. The number entered into the ’Risk’ column of the array below is the result following mitigation <u>not</u> the original value that may have been given to the threat or error.

It should make sense that the threats and errors identified must not only be included within the ATO training manual but should also be integral within the course lesson plans and be effective in the teaching.

Threat	Consequence	Mitigation	Error	Consequence	Mitigation	Risk: 1 -5	Lesson input
Uncontrolled flight and operations.	Taxiing collision. Deviation from flight profile: CAS bust & CFIT	Determine PIC: who has control and when.	Failure to establish the Pilot in Command; failure to recognise: control input confusion / no one has control	Conflicting control inputs leading to loss of controlled flight/taxi.	Ensure who is PIC and when: Control handover procedures: Verbalise: "I have control", "you have control	5 reduced **1**	All
Other aircraft	Collision	**LOOKOUT:** Correct scanning techniques. Left/right and above/ below. Weaving and clearing turns. **CLOCK CODE**	Rushed & incomplete scan. Eye blind spots/visual field limits. Failure to recognise closing flight paths & speeds. Poor communications	Conflict aircraft unseen. Avoiding action too late.	Training to understand the limitations of sight & training in collision avoidance procedures & techniques. Skills in clear articulate communications.	5 reduced **2**	All
Un-forecast winds, Weather/low cloud and poor visibility.	CFIT, breach of CAS, Becoming lost. Fuel exhaustion.	**MAP READING** skills. Flight planning; **Safe altitude. Heading & Time**, Positive fixes. Magnetic compass checks. Lost procedures. Radio aids and GPS skills. Minimum safe Operating Altitude	Poor flight planning. Incorrect reading of the map; Misidentification of features, Compass alignment & reading errors. Incorrect use of radio aids/GPS. Work rate overload	Entry into cloud. Disorientation; spacial/situational awareness lost - unsure of position. Degradation of confidence. Natural senses unreliable. Overload. CFIT	Continuous Lookout; situation/spacial awareness skills. Use of ATS. Priority of actions: aviate, navigate – communicate. Trust instruments.	5 reduced **2**	EX 6 -10, EX 18
Airframe Structure and component Overstress	Airframe/ Component failure.	Aircraft maintenance schedule. Flight time limits: Inspection, servicing and replacement. Vne – Vno - Va & Vfe	No/ poor pre-flight inspection. Unrecognised flight Limits. Exceeding VNE. Operation of flap/gear outside limits.	Miss-diagnosis. Incorrect response causing further alarm & confusion..	Understand PIC responsibilities. Check A. Documentation & checklist. Knowledge of aircraft limitations.	5 reduced **1**	All
Exceed engine limits	Engine failure. Engine malfunction	FREDA, Engine management; Monitor; Power/Prop limits, mixture, Oil: Ts & Ps	Failure to undertake, understand & monitor instruments & gauges. No routine checks.	Forced landing or unplanned diversion	FREDA, Climb/descent pre-entry checks	4 Reduced **2**	All

Continued..

Carburettor icing.	Engine failure/loss of power	FREDA checks. Identify ice/no ice.	Complacency: failure to ensure ice not present or eradicated. Icing undetected. No routine check.	Engine failure/loss of power. Work overload.	Applying Carb. Ht: from indications check to identify ice present. Allow Sufficient time for heat to purge ice.	4 Reduced **2**	All
Engine malfunction/failure	Reduced/total loss of power	Pre-flight and power checks. FREDA checks. Engine instruments monitored, mixture settings and temperatures managed. Forced landing drills.	Rushed or skimped pre-flight check. Oil dipstick unsecured. Power checks rushed or not completed. Failure to complete FREDA. Miss-management of mixture or temperatures. Forced landing procedures not followed.	Unable to maintain height. Forced landing: Loss of control, poor landing site selection. Severe damage, personal injury/fatal	Know and follow checks. Actually check – not just a routine. Refer to engineer ANY faults found prior to flight. Report post flight. In-flight malfunction; more likely to be action / inaction by the pilot – double check.	5 Reduced **3**	EX16/17
The intended/ unintentional Stall/spin	Potential for loss of control. Impact with the surface.	HASELL checks. Recovery techniques. Weight & balance Calculations.	Loose items in cockpit: incapacitate crew / restrict ion of controls. Insufficient height to recover from stall.	Jammed controls. Loss of control. Loss of Spatial & situational awareness. Serious injury/fatal	HASELL, Pre-stall/stall recognition signs. Identification. Terrain clearance. Power and speed maintenance. Stall avoidance/recovery	5 Reduced **3**	Ex 10/11
Propellers	Serious injury/fatal	Propeller handling. Stationary & rotating. Magnetos earthed (off). Mixture fully lean. Electric master off. Brakes and chocks.	Failure to follow propeller pre-handling procedures and poor/ no passenger safety brief given. Failure to ensure area clear of personnel and obstructions.	Serious injury/fatal. Propeller damage. Engine shock loaded.	Ensure area clear around aircraft pre-flight. Brief passengers regarding dangers and apron conduct. Ensure taxi path clear.	5 Reduced **2**	EX 1-5
Surface obstructions / taxiing/parked aircraft	Collision with other aircraft and surface obstructions.	Ensure area clear to taxi. Brakes checked immediately on taxiing. Controlled taxi speed. Maintain centre line markings.	Failure to check brakes. Taxiing too fast. Not maintaining centre lines. “Squeezing” between aircraft. Poor communications	Collision. Departure from taxiways. Ground loop/tip onto propeller following heavy braking.	Ensure taxi path clear. Brakes checked immediately after commencement of taxi. Weaving turns. Good communications.	4 Reduced **1**	Ex 1- 5

The tables below are taken from the CAA generic SMS provided as a template for ATO status applications.

3.5.1.2 **Risk severity should be defined in accordance with the following table.**

SEVERITY OF CONSEQUENCES		
Definition	**Meaning**	**Value**
Catastrophic	Results in an accident, death or equipment destroyed	5
Hazardous	Serious injury or major equipment damage	4
Major	Serious incident or injury	3
Minor	Results in a minor incident	2
Negligible	Nuisance of little consequence	1

3.5.2.2 **Risk likelihood should be defined in accordance with the following table:**

LIKELIHOOD OF OCCURRENCE		
Definition	**Meaning**	**Value**
Frequent	Likely to occur many times	5
Occasional	Likely to occur sometimes	4
Remote	Unlikely to occur but possible	3
Improbable	Very unlikely to occur	2
Extremely Improbable	Almost inconceivable that the event will occur	1

3.5.4 Risk Tolerability Matrix

The tolerability of an individual risk is determined by use of the following Risk Matrix:

Risk Likelihood	**Risk Severity**				
	Catastrophic 5	**Hazardous 4**	**Major 3**	**Minor 2**	**Negligible 1**
Frequent 5	Unacceptable	Unacceptable	Unacceptable	Review	Review
Occasional 4	Unacceptable	Unacceptable	Review	Review	Review
Remote 3	Unacceptable	Review	Review	Review	Acceptable
Improbable 2	Review	Review	Review	Acceptable	Acceptable
Extremely Improbable 1	Review	Acceptable	Acceptable	Acceptable	Acceptable

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Flight Lesson Plans

Phase 1

Basic Handling & Stalling

(Ex 3 – 10b)

Phase 1 Overview

During Phase 1 Syllabus Exercises 1 to 10b inclusive should be completed to a competent standard, as detailed within the Lesson Plans.

The Threat Error Management points shown below must all be covered before moving on to Phase 2.

Threat Error Management:

Threat	Consequence	Mitigation
Handover/Takeover of control	No one has control	Control handover procedures
Other aircraft	Collision	Develop lookout
Blind spots	Collision	Lookout
Aircraft above/below	Collision	Lookout/weave
Loss of bearings	Becoming lost	Map interpretation/ Reference points
Unfamiliar surroundings	Becoming lost	Local area orientation Map orientation/reading
Use of flap at high speed	Overstress aircraft	Vfe/ LOI (Limitation-Operation-Indication)
Flap misuse	Overstress/sink	After take off checks (LOI)
Exceeding engine limits	Engine damage/failure	RPM red line
System/Engine problems	System/Engine failure	Monitor gauges/ FREDA Check Systems management
Engine excessive cooling/ overheating / carb ice	Engine malfunction	Climb/descent pre-entry checks Monitor gauges HASELL checks Engine management
Weather conditions	Entry into cloud	Climb/descent pre-entry checks
CAS in vicinity	CAS bust	HASELL checks
Descending too low	CFIT/Low flying rules	Minimum Operating Altitude
Insufficient height to recover from stall/spin	Collision with ground	HASELL checks
Loose items in cockpit during stalling	Hit crew/restrict controls	HASELL checks

HASELL CHECK

HEIGHT	Sufficient height to recover by 3000’ AGL
AIRFRAME	Flap setting as required
SECURITY	No loose articles. Seats and harnesses secure
ENGINE	Ts & Ps within limits. Mixture rich. Carb’ Heat check, Fuel Pump
LOCATION	**ABCCD** – Not above **A**ctive airfield, **B**uilt up area, **C**loud or **C**AS, or **D**anger area
LOOKOUT	Clearing turns (2 x 90° or 1 x 180°)

The following items must also be covered before moving onto Phase 2. The exact point in Phase 1 that these are covered is determined by the instructor and will depend on various factors not least the student's ability and progress being made. The points at which some of the items below may be introduced have been included in the lesson plans and the list below.

The dates the items are covered are to be included in the following table and signed by both the student and the instructor when competent.

PRE FLIGHT	TEACH	PRACTISE	COMPETENT
Administration (Lesson2)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
External checks (Lesson2)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Cockpit preparation (Lesson2)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Use of ventilation and heating controls (Lesson2)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Use of check list (Lesson2)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Starting procedures and warm up (Lesson2)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Taxy	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Use of radio	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Power checks/pre take off checks (Lesson3)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

Normal take off	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Engine fire on the ground (Lesson4)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Steering failure (Lesson5)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Brake failure (Lesson5)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Passenger and pre take-off brief	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Cabin fire (Lesson7)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Electrical fire (Lesson7)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Smoke in the cockpit	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

RECOVERY TO BASE AND IN THE CIRCUIT	TEACH	PRACTISE	COMPETENT
Approach checks (Lesson4)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Arrival procedures (Lesson4)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Map orientation/reading (Lesson4)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

Landing (Lesson6)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
After landing checks (Lesson4)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Alternator failure	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Loss of fuel pressure	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Loss of oil pressure	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
High oil temperature	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Engine fire in the air (Lesson6)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Smoke in cockpit	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

POST FLIGHT	TEACH	PRACTISE	COMPETENT
Shutting down (Lesson3)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Administration (Lesson3)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

Additional Guidance Notes for Teaching Slow flight and Stalling

Ex 10A – Slow Flight

Some manuals suggest that slow flight should be taught utilising periods of flight instruction and student practise during which the aircraft is manoeuvred whilst maintaining the airspeed at between 5 and 10 knots above the stalling speed. Whilst applauding the intention of exposing the student to the handling characteristics of the aircraft close to the stall, it does mean that the stall warning on a certified aircraft will be activated almost continuously throughout the exercise. This is likely to be counter-productive as it can undermine the immediate reaction to any stall warning, which should be to instigate immediate and appropriate recovery action. For the instructor to continue flying the aircraft in the same manner whilst telling the student to ignore the stall warning is probably, at best, negative teaching.

The object of PPL(A) flight training should principally be to concentrate on giving the pilot the skills to operate the aircraft close to the centre of the "normal" operating envelope for the phase of flight. Any excursion away from "the centre" should result in immediate action to return the aircraft to safety. Slow Flight exercises taught using the method above are perhaps teaching the student to operate the aircraft for a lengthy period at close to the edge of the envelope – a situation in which the basic PPL(A) holder should not be operating in any circumstance.

Additionally, on some aircraft types, the nose attitude attained to replicate the speed profiles described gives minimal forward field of view from a cockpit perhaps not blessed with the best view in the first place. In busy airspace this in itself could present a serious risk, the value of the training probably does not warrant this risk being undertaken.

Experience suggests that the more effective way to deal with the slow flight exercises is to introduce them in the relevant parts of the course in combination with other exercises.

During the straight and level exercises the teaching of the "low, safe cruise", introduces cruising at minimum practical speed. Cruising at speeds for best range and endurance should also be covered. These skills naturally lead into the teaching of the "bad weather circuit" later in the PPL course – again a practical use of slow flight techniques avoiding the stall.

An area of concern highlighted in the GASCO Report on stalling accidents was the mishandling of the short-field take-off and climb at best angle. This was implicated in a high number of accidents. At the appropriate point in the PPL course – probably during the lessons following the solo consolidation of circuits – the short-field take-off and climb at best angle should be thoroughly taught and practised. Within this training the instructor should demonstrate the full stall during a simulated mishandled climb at best angle after take-off (use full power and, if appropriate, take-off flap). This should then be developed into recognition of the impending stall in this situation with both teaching and student practise of recovery at the incipient stage.

Another opportunity to explore the characteristics of slow flight is presented during the teaching of forced landings, with and without power. In the case of a forced landing with power still available (precautionary landing), it can be demonstrated that this exercise is an extension of the "bad weather circuit" already covered earlier in the course. As part of the teaching of forced landings without power, the instruction should include recovery at the incipient stage from a mishandled glide. Again, the instructor should point out that close control of attitude and speed will be the best way of preventing a stall situation from developing.

As part of the exercise teaching advanced turning (steep turns), the recovery from the incipient stall in the turn should be included with appropriate student practise.

In summary, it can be seen that slow flight and recovery from the incipient stall situations that may develop is a theme that runs through many of the PPL syllabus items. Exercise 10B will give the building blocks of stall recognition and prevention, but for full instruction and learning in stall prevention to have been achieved the subject needs to be explored within many of the flight exercises.

Ex 10A/B Stalling

The stalling exercises form the first stage in upset prevention training, and must be taught before instruction in circuit flying. This will ensure that the student, once in the circuit, can recognise a hazardous situation developing and take prompt action to prevent the stall. Prior to first solo, a third stalling exercise should be scheduled to revise and practise stall recovery at the incipient stages to ensure currency in stalling. Certainly with part-time students there can be a protracted time period between the stalling exercises and the completion of circuit training to first solo standard. This third visit to stall recognition and recovery can do much to reduce the threat of stalling during first solo and the subsequent solo circuit practises.

Exercise 10A/B (1) – Stalling Part One

This exercise covers stalling only in the clean configuration. During the exercise the student will learn to recognise the signs of the full and incipient stall, the main emphasis being the incipient stall signs. Recovery from both a full stall and incipient stall are taught and practised. Initially, the student's recoveries may be a little mechanical; it is important to get the recovery technique correct first, before honing it to achieve minimum height loss. Minimum height loss may not be achieved during this first lesson – it is probably better to keep the lesson moving along than trying to achieve this aim while frustrating both the instructor and student! Additionally, stall recovery may be a little uncomfortable for some students, so a prolonged exposure could result in them feeling airsick.

Considerations

Ideally the student should have had a full stall and recovery demonstrated during a previous lesson. This will have the positive effect of dispelling some of the "crewroom myths" about how dreadful the stalling exercises are. Even so, most students are a little apprehensive about this exercise, and any perceived apprehension on the part of the instructor will only further increase the student's anxiety. The instructor must display a positive attitude to the exercise, and each briefing session should reassure the student about the safety of the exercise. In no circumstance should this exercise give the impression that "we've got to do this so let's get it over with".

Threat & Error Management / Airmanship

Checks Prior to Stalling:

Prior to getting airborne, try to ensure that the student has learned the contents of the HASELL (& HELL) checks. This allows airborne instruction to be concentrated on how to conduct the checks whilst maintaining a good lookout and adequate aircraft control. Again, this can be demonstrated on a previous exercise as part of the stall demonstration. Typical contents of the HASELL check are as follows:

HEIGHT For initial training sufficient to recover by 3000 above ground level. This assumes that weather and airspace allows for this. Note that some height will be lost during the demonstrations of the incipient and full stall signs, this often equates to some 1000'.

AIRFRAME Flaps as required.

SECURITY No loose articles in footwells, on the coaming, or the area behind the seats. Pockets all secure. Harnesses tight, seat position locked, canopy/doors closed and secure.

ENGINE Check for Carb' icing. Fuel contents sufficient and balanced. Fuel selector checked ON - fullest tank. Oil temp' & pressure normal. Fuel Pump "ON" if applicable

LOCATION "ABCCD"- Not above Active airfields, Built up areas, Controlled airspace, clear of Cloud (maintain VMC) and Danger areas (equally applies to prohibited and restricted areas).

LOOKOUT Either 2 x 90 degree turns or 1 x 180 degree turn. Note that the emphasis on looking out during the turn rather than turn accuracy should be emphasised as part of the teaching.

Checks After Stalling:

On completion of the Stalling exercise teach the student to conduct a full FREDA check. In addition to resetting the DI and reviewing the fuel contents/balance this will also double up as the FREDA check required before rejoin.

Air Exercise

During the entry, ensure that rudder is used to prevent yaw when the throttle is closed. Progressively raise the nose and trim for approximately V_{REF} whilst attempting to maintain straight and level. The trim setting is not vitally important, but it does give a consistent feel to the aircraft and on those aircraft where pitch control is heavy this will ensure that full deflection of the elevator can be achieved without the student feeling that they are working out in the gym. Most training aircraft will require full elevator deflection, or at least pretty close to it, for the critical AoA to be achieved. Once the entry has been taught, the student should perform each subsequent entry. Remember to take control early enough during the entry to enable your teaching and demonstrations not to be rushed.

Subject to specific aircraft type considerations, include each of the following items when teaching the signs of the approaching stall:

- Low and reducing airspeed.
- Decreasing control effectiveness.
- High nose attitude.
- Stall warner.
- Light buffet.

Demonstrate the decreasing control effectiveness by showing the low rate of pitching using relatively large pitch inputs – take care not to be too heavy handed or you will stall prematurely! Previously, some instructors have used aileron inputs to illustrate this point. Some now believe that showing the student use of coarse aileron close to the stall is inappropriate. An important learning objective is for the student to recognise the stall warner and buffet. To establish this, gently pitch nose up to activate the stall warner and generate buffet pointing out to the student when each occurs. Gently pitch nose down and demonstrate that this action removes the buffet and silences the stall warner. Repeat these pitching manoeuvres but elicit from the student recognition of when the stall warning sounds and the buffet is felt. Accept that you will lose altitude during this demonstration (hence the earlier comment regarding height in the HASELL check).

Again, subject to the type specific aircraft considerations, teach each of the following signs of the full stall, if and when they appear:

- Heavy buffet.
- Nose drop.
- Sink.
- Possible wing drop.

To allow each of these signs to be taught effectively will require the aircraft to be held in a fully stalled condition sufficient to teach these signs. Make it clear to the student that recovery is normally initiated on the first incipient stall sign, the delay in recovery on this occasion is to allow the student to see the full range of full stall signs.

Recovery at the incipient stage should be taught first with recovery action being initiated by the sounding of the stall warner and/or onset of buffet. Individual aircraft type stalling characteristics will determine which is best to use. Stress during the teaching that in a real situation, recovery should be carried out at the first sign of the approaching stall whatever it may be. Note that the recovery action is standard stall recovery (SSR), but the forward movement of the control column / wheel is very small, only sufficient to remove the buffet / stall warner. Whilst not essential, it can be useful to note the altitude at which the stall warning occurred so that the height lost can be noted. Ensure that the student maintains balance throughout the recovery.

Standard Stall Recovery (SSR) from a fully stalled condition is then taught. Recovery action should be initiated at the first full stall sign. Noting the entry height will again enable the height lost during recovery to be demonstrated illustrating the increased height loss in the event of a full stall. This emphasises the benefit of early recognition and recovery at the incipient stage.

Recovery without power can then follow. This clarifies that to recover from the stall the angle of attack must be reduced using the elevator, which remains effective in the stall. The other teaching point that is worthy of mention to the student is that this recovery technique would have to be used should they inadvertently stall whilst carrying out a forced landing without power. For this reason once stall recovery is complete it may be wise to teach that the next action is to establish the aircraft at the recommended gliding speed. This also provides a clear situation in which both student and instructor can recognise that the teaching/practise is complete. There can then be no confusion regarding the application of power for climbing back to the start height, which might be the case if a climb is initiated straight after recovery without power.

Again, if the height loss is noted, the student will see that without the use of power a greater height loss is experienced to achieve recovery.

Exercise 10A/B(2) – Stalling Part Two

Exercise 10A/B(1) taught the student to recognise and recover from a clean, power off stall. This lesson will teach recovery from more realistic situations that might be encountered. It could be described as teaching the student the skills to prevent him from stalling in the circuit. As part of this exercise the effects of power and flap will be demonstrated. As such, reference to the Pilots Operating Handbook / Flight Manual prior to flight can prove useful as this will give some insight into these effects which can then be reinforced during the airborne exercise. This exercise will also enable approximate speeds to be derived for V_{s1} and V_{so} which, again, can be demonstrated when airborne.

Considerations

This exercise is primarily aimed at stall prevention. Recovery at the incipient stage is the important part of this exercise. All too often instructors spend so much time dealing with full stall recovery from stalls with power and/or flap that the incipient recoveries are rapidly covered at the end of the lesson as if just a small, academic part. It may be that the student has a lot of problems dealing with the power/flapped stall recoveries at first, particularly if wing drop is present. Don't get bogged down in these recoveries at the expense of the recovery at the incipient stage being taught and practised thoroughly.

Threat & Error Management / Airmanship

The HASELL checks are the same as for the previous exercise. A convenient method for achieving the correct configuration for the stall and setting the scenario is to fly the latter part of a simulated circuit incorporating the checks – the lookout turns can be from a simulated downwind to base and then base to final.

Air Exercise

The exercise should begin with revision of recovery from the stall at the incipient stage followed by revision of SSR from a full stall (clean configuration, power off). Brief the student to note the following during his entry to the full stall;

- Rate of deceleration.
- The nose attitude at a speed approximately 10 knots above stalling speed. This would ideally be the attitude at the stall, but this is almost impossible for the student to note given that there is much happening at the point of stall, not least the need for recovery action to be initiated.
- Control effectiveness – point the relatively large elevator inputs required to maintain level flight.
- IAS at the stall.

This should provide a datum with which the student can then compare the effects of power and flap. With a less able student, it may be necessary for the instructor to perform a datum stall to provide a datum for the student to use.
Having set a datum the next part will be to teach the effect of power and flap on the stall. The exact power settings and flap extension to be used will be aircraft type specific. As a general guide try to use approach power and landing flap whenever possible. With both of these stalls, ensure that a full stall and recovery is demonstrated and practised. Should wing drop occur, teach the correct use of rudder as part of the recovery. The amount of rudder used should be sufficient only to prevent further yaw developing. On no account should an attempt be made to "pick-up" the wing drop with rudder.

A full stall in the landing configuration with typical approach power should then be taught. The main points to come out of this instruction are as follows:

- The rate of deceleration depends on the attitude and power, but may be relatively slow.
- The nose attitude is higher than would be normal on the approach.
- The stall warner will activate.
- The duration of the pre-stall buffet is short.
- The stalling speed will be reduced further as both flap and power are in use.
- Wing drop is likely.

Point out that there were plenty of clues that to alert the pilot to the impending stall situation. The height loss incurred, especially if wing drop is present, is such that recovery from a full stall on final might not be possible, hence the need to recover at the incipient stage.

Recoveries at the incipient stage should be taught and practised both for a stall on final and in the base to final turn. When setting up for these stalls it is important to make the situation as realistic as possible. For the stall on the final approach, suggest to the student that during the base leg the power is incorrectly set too low, this results on being low on the final approach once the wings are level hence the higher nose attitude to try to regain the correct approach path. If this attitude is maintained without any power increase then a stall situation will inevitably develop.
A similar situation will be appropriate for the stall in the base to final turn. This time brief that the aircraft has become low during the base leg, the aircraft has flown through the runway centreline, so a level turn at 30 degrees AoB is attempted to rectify these errors. If excessive bank angle is used, on most training aircraft the nose will tend to drop into the turn and achieving a stall will prove extremely difficult. This will not assist the credibility of the teaching. Recovery from the stall in the turn is still SSR but note that it is important to ensure that the wing is unstalled prior to using the roll controls to achieve a laterally level attitude.

Exercise 10A/B (3) - Stalling Part Three

As the student progresses towards first solo standard, this exercise gives essential stalling recognition and recovery practice.

The exercise begins with a normal departure from the circuit and climb to a safe height for the stalling revision. The student should be able to perform the HASELL checks, prompt or re-teach as required. The student should then perform the following stalls as revision:

- Recover at the incipient stage from a stall on a simulated final approach to land.
- Recover at the incipient stage from a stall in the approach configuration whilst on a simulated base to final turn.
- Recover at the incipient stage from a stall in the take-off configuration whilst in a climbing turn.

During the exercise the quality of the entry to the stall is relatively unimportant as long as an effective stall in the correct configuration is achieved. The standard of the recoveries are of prime importance. The recovery must be timely, with minimum height loss and result in the aircraft being safely established into a climb at recommended speed – effectively a go-around. An experienced pilot might be able to re-establish the aircraft on final after an incipient stall but at this stage of the student's training it is probably best practise to insist on a go-around from any incipient stall recovery. Any shortfall in the required standard should be addressed with either further practise or teaching as necessary.

Any time remaining of the lesson can be utilised for further circuit practise or teaching as required.

NOTES:

If exercise 10AB (1) has been completed then exercises 12 and 13 can be started if conditions, such as low cloud base, prevents 10AB (2) from being carried out – be flexible.

If there has been a long gap between Stalling Part 3 and potential first solo, carry out Stalling Part 3 again.

SYLLABUS CHECK LIST – EASA Ref: AMC 1 FCL.210.A (c) 2

EASA Ref.	Exercise	Notes
(i) Ex 1a Aircraft Familiarisation	(A) characteristics of the aeroplane; (B) cockpit layout; (C) systems; (D) checklists, drills and controls.	
(ii) Ex 1b Emergency drills	(A) action if fire on the ground and in the air; (B) engine cabin and electrical system fire; (C) systems failure; (D) escape drills, location and use of emergency equipment and exits.	
(iii) Ex 2 Preparation for and action after flight	(A) flight authorisation and aeroplane acceptance; (B) serviceability documents; (C) equipment required, maps, etc.; (D) external checks; (E) internal checks; (F) harness, seat or rudder panel adjustments; (G) starting and warm-up checks; (H) power checks; (I) running down system checks and switching off the engine; (J) parking, security and picketing (for example tie down); (K) completion of authorisation sheet and serviceability documents.	
(iv) Ex 3 Air experience	Air experience: flight exercise.	
(v) Ex 4 Effects of controls	(A) primary effects when laterally level and when banked; (B) further effects of aileron and rudder; (C) effects of: (a) air speed; (b) slipstream; (c) power; (d) trimming controls; (e) flaps; (f) other controls, as applicable. (D) operation of: (a) mixture control; (b) carburettor heat; (c) cabin heating or ventilation.	

(vi) Ex 5a Taxiing	(A) pre-taxi checks; (B) starting, control of speed and stopping; (C) engine handling; (D) control of direction and turning; (E) turning in confined spaces; (F) parking area procedure and precautions; (G) effects of wind and use of flying controls; (H) effects of ground surface; (I) freedom of rudder movement; (J) marshalling signals; (K) instrument checks; (L) air traffic control procedures.	
(vii) Ex 5b Taxiing emergencies	Brake and steering failure	
(viii) Ex 6 Straight and level	(A) at normal cruising power, attaining and maintaining straight and level flight; (B) flight at critically high air speeds; (C) demonstration of inherent stability; (D) control in pitch, including use of trim; (E) lateral level, direction and balance and trim; (F) at selected air speeds (use of power); (G) during speed and configuration changes; (H) use of instruments for precision.	
(ix) Ex 7 Climbing	(A) entry, maintaining the normal and max rate climb and levelling off; (B) levelling off at selected altitudes; (C) en-route climb (cruise climb); (D) climbing with flap down; (E) recovery to normal climb; (F) maximum angle of climb; (G) use of instruments for precision.	
(x) Ex 8 Descending	(A) entry, maintaining and levelling off; (B) levelling off at selected altitudes; (C) glide, powered and cruise descent (including effect of power and air speed); (D) side slipping (on suitable types); (E) use of instruments for precision flight.	

(xi) Ex 9 Turning	(A) entry and maintaining medium level turns; (B) resuming straight flight; (C) faults in the turn (for example in correct pitch, bank and balance); (D) climbing turns; (E) descending turns; (F) faults in the turns (slipping and skidding on suitable types); (G) turns onto selected headings, use of gyro heading indicator and compass; (H) use of instruments for precision.	
(xii) Ex 10a Slow flight	(A) safety checks; (B) introduction to slow flight; (C) controlled flight down to critically slow air speed; (D) application of full power with correct attitude and balance to achieve normal climb speed.	
(xiii) Ex 10b Stalling	(A) safety checks; (B) symptoms; (C) recognition; (D) clean stall and recovery without power and with power; (E) recovery when a wing drops; (F) approach to stall in the approach and in the landing configurations, with and without power and recovery at the incipient stage.	

LESSON 1 – EXERCISE 3 AIR EXPERIENCE

DURATION 0:30

Aim: To introduce the student to single engine piston flying.

Threat Error Management:

Threat	Consequence	Mitigation
Handover/Takeover of control	No one has control	Control handover procedures

PRE FLIGHT:

- Introduction to safety around the aircraft
- Emergency and evacuation brief (Keep simple)
- Preparation for flight (Introduction to the basics only)
- Handover/ Takeover/Follow Through/Relax procedures

AIREX:

- Aircraft familiarisation
- Introduction to attitude flying

DEBRIEF:

- Instructor to debrief and encourage student to continue

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Comments:

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Date: Instructor:

LESSON 2 – EXERCISE 4.1 EFFECTS OF CONTROLS 1 DURATION 1.00

Aim: To learn the effects of the primary controls. To select, hold and trim an attitude.

Threat Error Management:

Threat	Consequence	Mitigation
Unfamiliar surroundings	Becoming lost	Local area orientation
Other aircraft	Collision	Develop lookout (clockcode)

PRE FLIGHT:

- Pre-flight brief on Effects of Controls Part 1 (Ex 4.1)
- Pre-flight brief on Taxying (Ex 5)
- **Instructor to teach:**
  - Administration
  - External checks
  - Cockpit preparation
  - Use of ventilation and heating controls
  - Use of check list
  - Engine starting procedures.

AIREX:

- Datum attitude
- Primary effect of the:
  - Elevators
  - Ailerons
  - Rudder
- Effect and use of trim – Select – Hold - Trim
- Effect of speed on the primary controls
- Effect of slipstream on the primary controls
- Further effect of the:
  - Elevators
  - Ailerons
  - Rudder
- Demonstrate adverse yaw and the need for co-ordinated use of controls when rolling
- Teach introduction to taxying during taxy after landing.

DEBRIEF:

Instructor to debrief and inform student what to study for next lesson.

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Accuracy at this stage is a secondary consideration. An understanding of the principles involved and the techniques to be applied are essential, however. The following competencies must, therefore, be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

☐ Roll, pitch and yaw control	Omitted / Re-teach / Revise
☐ The effects of speed & slipstream	Omitted / Re-teach / Revise
☐ The inter-relationship between roll & yaw	Omitted / Re-teach / Revise
☐ Adverse aileron yaw	Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

☐ Control the aircraft in all 3 axes	Omitted / Re-teach / Revise
☐ Select and trim to an attitude	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

Aim: To set an engine RPM and operate the supplementary controls whilst maintaining the datum attitude in trim.

Threat Error Management:

Threat	Consequence	Mitigation
Use of flap at excess speed	Overstress aircraft	V_{FE}
Exceed engine limits	Engine damage/failure	RPM red line

PRE FLIGHT:

- Pre-flight brief on Effects of Controls Part 2 (Ex 4.2)
- Introduction to weather interpretation and NOTAM decoding
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:**
  - Operation of radio (tailored to the individual)
  - Taxy (continued)
  - Power checks and pre take off checks
- **Instructor to demo:**
  - Normal take off

AIREX:

- Revision of effects of controls part 1 – Select/Hold/Trim to attitude
- Use of throttle and the engine gauges
- Effect of power
- Effect and use of flap: Limitation – Operation – Indication
- Supplementary controls: Use of mixture and carb heat
- Set an engine RPM
- **Recovery to base instructor to demo:**
  - Approach checks
  - Arrival procedures
  - Map orientation

- **POST FLIGHT:**

- **Instructor to teach:**
  Shutting down
  Administration

DEBRIEF:

- Instructor to debrief and inform student what to study for next lesson.

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Before moving on to the next lesson reasonable accuracy and proficiency should be shown in the techniques listed below.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ The trim controls — Omitted / Re-teach / Revise
- ☐ The throttle and RPM controls — Omitted / Re-teach / Revise
- ☐ The flaps — Omitted / Re-teach / Revise
- ☐ Other engine & ancillary controls — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Select & trim to any pitch attitude — Omitted/Re-teach/Revise
- ☐ Maintain attitude & direction whilst changing power — Omitted/Re-teach/Revise
- ☐ Maintain attitude & direction whilst operating flaps — Omitted/Re-teach/Revise
- ☐ Retrim following changes to power and flaps — Omitted/Re-teach/Revise
- ☐ Operate the ancillary controls — Omitted/Re-teach/Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 4 – EXERCISE 6.1 STRAIGHT AND LEVEL 1

DURATION 1.00

Aim: To learn to fly straight and level, in balance and in trim, at a constant power setting

Threat Error Management:

Threat	Consequence	Mitigation
System/Engine problems	System/Engine Failure	Monitor gauges – FREDA Check

PRE FLIGHT:

- Pre-flight brief on Straight & Level Part 1 (Ex 6.1)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Develop R/T and begin introducing emergencies with engine fire on the ground. Teach normal take-off.

AIREX:

- Revision of effects of controls (Select/Hold/Trim to Datum Attitude)
- Achieve straight flight
- Achieve level flight
- Achieve straight and level flight
- Balance
- Lookout (Teach scan technique)
- Teach maintenance of S & L (Lookout/Attitude/Instruments) - FREDA
- Correct to datums (Constant power - +/- 100' - +/- 10°)
- **Recovery to base instructor to teach:**
  - Approach checks
  - Arrival procedures
  - Map orientation

POST FLIGHT:

Instructor to teach:
After landing checks

Student to practise:
Shutting down
Administration

DEBRIEF:

- Instructor to debrief and inform student what to study for next lesson.

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An understanding of the relationship between power, attitude and trim is required in this lesson along with recognition of the correct attitude 'pictures'. The understanding of the principles involved is more important than accuracy at this stage but the following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Achieving S&L flight with ref to attitude — Omitted / Re-teach / Revise
- ☐ Maintaining balanced flight — Omitted / Re-teach / Revise
- ☐ Appropriate power setting for cruise speed — Omitted / Re-teach / Revise
- ☐ Power + Attitude = Performance — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Recover to and maintain balanced, S&L from attitude excursions — Omitted / Re-teach / Revise
- ☐ Trim the aircraft — Omitted / Re-teach / Revise
- ☐ Make small corrections to recover & maintain HDG & altitude datum — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 5 – EXERCISE 6.2 STRAIGHT AND LEVEL 2

DURATION 1.00

Aim: To learn to fly the aircraft straight and level at different power settings, speeds and with flap.

Threat Error Management:

Risk	Consequence	Mitigation
Use of flap at high speed	Overstress aircraft	Vfe/ Limitation-Operation -Indication (LOI)

PRE FLIGHT:

- Pre-flight brief on Straight & Level Part 2 (Ex 6.2)
- Weather and NOTAM brie
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Brake failure and steering failure

AIREX:

- Revision of straight and level 1
- Deceleration & acceleration
- Straight & level at different power settings and speeds
- Relate to best endurance and best range speeds
- Speed instability (slow flight)
- Straight & level with flaps
- Slow safe cruise
- **Recovery to base student to practise:**
  a. Approach checks
  b. Arrival procedures
  c. Map orientation
- **Recovery to base instructor to demonstrate:**
  a. Landing

POST FLIGHT:

- **Student to practise:**
  a. After landing checks
  b. Shutting down
  c. Administration

DEBRIEF:

- Instructor to debrief and inform student what to study for next lesson.

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As well as understanding the principles stated below, before moving on to the next lesson, reasonable accuracy and proficiency needs to be shown in the necessary techniques.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Speed stability — Omitted / Re-teach / Revise
- ☐ Best endurance speed — Omitted / Re-teach / Revise
- ☐ Best range speed — Omitted / Re-teach / Revise
- ☐ Slow safe cruise — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Maintain S&L when adjusting power — Omitted/Re-teach/Revise
- ☐ Maintain S&L when changing speed — Omitted/Re-teach/Revise
- ☐ Maintain S&L when changing configuration — Omitted/Re-teach/Revise
- ☐ Retrim following changes — Omitted/Re-teach/Revise
- ☐ Adopt slow safe cruise & return to normal cruise — Omitted/Re-teach/Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 6 – EXERCISE 7.1 & 8.1 CLIMBING & DESCENDING 1 AND EXERCISE 9.1, MEDIUM LEVEL TURNS

DURATION 1.00

Aim: To climb and glide the aircraft to specified altitudes at recommended speeds. To learn to execute a level turn at 30° AOB, maintain and roll out onto specific headings.

Threat Error Management:

Threat	Consequence	Mitigation
Aircraft above/below/blind spots	Collision	Lookout/weave
Engine cooling/heating/carb ice	Engine malfunction	Pre-entry checks Monitor gauges Carb heat
Loss of bearings	Becoming lost	Map interpretation/ref points

PRE FLIGHT:

- Pre-flight brief on Climbing & Descending Part 1 (Ex 7.1 & 8.1)
- Pre-flight brief on Medium Level Turns (Ex 9.1)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- Revision of straight and level 2 – Achieve S & L @ different IAS.
- Teach/Practise:
  a. Maintain the climb (inc. control of IAS and engine management)
  b. Entry into the climb
  c. Level off at specified altitudes

- Teach/Practise:
  a. Maintain a medium level turn
  b. Entry into a medium level turn
  c. Roll out of a medium level turn onto specific features/headings

- Teach/Practise:
  a. Maintain the glide (inc. control of IAS and engine management)
  b. Entry into the glide
  c. From glide to climb
  d. Engine fire in the air drill

- **Recovery to base student to practise:**
  a. Approach checks
  b. Arrival procedures
  c. After landing checks
- **Recovery to base instructor to teach:**
  b. Develop map reading skills
  c. Landing

POST FLIGHT & DEBRIEF: As previous

EASA Ref: AMC1 FCL.210.A (c) 2 ix & x Ex7 & 8 page 180/181 and xi Ex9 page 181

This early lesson in climbing and descending requires an essential understanding of the use of power and attitude to control airspeed to attain best rate of climb (Vy) and the glide descent. Recognition of the correct attitude 'pictures' and the correct use of elevator and rudder trim are essential.
The medium level turns exercise requires an understanding of entry technique, use of controls in the turn, attitude reference and roll out technique.
Refined accuracy is not required at this stage and will follow with practise.
The following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

☐ Climbing at best rate	Omitted / Re-teach / Revise
☐ Descending in the glide	Omitted / Re-teach / Revise
☐ A medium level turn	Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

☐ Enter a climb and recover to S&L	Omitted / Re-teach / Revise
☐ Enter the glide and recover to S&L	Omitted / Re-teach / Revise
☐ Maintain balance and hdg in climb/descent	Omitted / Re-teach / Revise
☐ Make transition from glide to climb	Omitted / Re-teach / Revise
☐ Turn, recovering by ref to landmarks	Omitted / Re-teach / Revise
☐ Turn, recovering onto specified hdgs	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 7 – EXERCISE 7.2 & 8.2 CLIMBING & DESCENDING 2

DURATION 1.30

Aim: To learn the climb and descent techniques used in the circuit.

Threat Error Management:

Threat	Consequence	Mitigation
Weather conditions	Entry into cloud	Pre-entry checks
Descending too low	CFIT/Low flying rules	Pre-entry checks
Flap misuse	Overstress/sink	After take off checks

PRE FLIGHT:

- Pre-flight brief on Climbing & Descending Part 2 (Ex 7.2 & 8.2)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Cabin fire and electrical fire on the ground

AIREX:

- Revision of climbing and descending Part 1

Teach then student practice:

- Climbing turns
- Effect of flaps in the climb
- Effect of flaps in the glide
- Effect of power in the descent
- Descending turns

Fly a dummy circuit at a safe altitude to teach the following followed by student practice:

- Approach & landing configurations – control of descent
- Go around
- Demonstration stall: Student to fly S&L,clean @ 70 kts. Instructor shows features of slow flight, pre stall features, full stall and recovery.

- **Recovery to base student to practise:** Items as seen appropriate from the overview. Control of descent on Final Approach (from straight in approach from 1000')
- **Recovery to base instructor to:** Teach landing

POST FLIGHT & DEBRIEF: As previous

EASA Ref: AMC1 FCL.210.A (c) 2 ix & x Ex7 & 8 page 180/181

As well as understanding the principles stated below, before moving on to the next lesson, reasonable accuracy and proficiency needs to be shown in the necessary techniques.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Effect of flaps in the climb — Omitted / Re-teach / Revise
- ☐ Effect of flaps on the glide — Omitted / Re-teach / Revise
- ☐ Effect of power in the descent — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Carry out climbing turns — Omitted / Re-teach / Revise
- ☐ Carry out descending turns — Omitted / Re-teach / Revise
- ☐ Level off at pre-determined altitudes — Omitted / Re-teach / Revise
- ☐ Descend in approach configuration — Omitted / Re-teach / Revise
- ☐ Descend in landing configuration — Omitted / Re-teach / Revise
- ☐ Perform a go round — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 8 – EXERCISE 10A/B(1) STALLING PART 1

DURATION 1.00

Aim: To learn to recognise and recover from the full and approaching stall with minimum loss of height.

Threat Error Management:

HASELL Checks

PRE FLIGHT:

- Pre-flight brief on Stalling Part 1 (Ex10B1)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- Revision as required
- **Introduction to the stall:**
  - **a.** Teach HASELL and entry
  - **b.** Demonstrate full stall and recovery (if not previously done)
  - **c.** Teach signs of the approaching stall
  - **d.** Teach full stall features
- **Recovery from the stall:**
  - **a.** Recovery at incipient stage
  - **b.** Standard Stall Recovery (SSR)
  - **c.** Recovery without power
  - **d.** Checks after stalling – FREDA

- **Recovery to base student to practise:** Items as seen appropriate from the overview
- **Recovery to base instructor to:** Teach cruise descent and level off. Assess base, final approach and landing

POST FLIGHT & DEBRIEF: As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xiii Ex10b page 181

This first stalling lesson requires an essential understanding of the principles of flight involved with stalling. Recognition of the signs of the incipient stall and symptoms of a stall is essential and understanding that the buffet is the critical sign is of paramount importance. The main emphasis is on the incipient stall signs.
It is important to get the recovery technique correct first before honing the technique to achieve minimum height loss. Therefore the correct stalling technique is to be demonstrated by the student to a good standard before moving on to the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Signs of the incipient stall — Omitted / Re-teach / Revise
- ☐ Symptoms of the full stall — Omitted / Re-teach / Revise
- ☐ Standard Stall Recovery — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Carry out HASELL checks — Omitted / Re-teach / Revise
- ☐ Recover at the incipient stage (SSR) — Omitted / Re-teach / Revise
- ☐ Recover from a full stall (SSR) — Omitted / Re-teach / Revise
- ☐ Recovery without power — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 9 – EXERCISE 10A/B(2) STALLING PART 2 DURATION 1.00

Aim: To learn to recognise and recover from the full and approaching stall in the approach and landing configuration with minimum loss of height.

Threat Error Management:

HASELL Checks

PRE FLIGHT:

- Pre-flight brief on Stalling Part 2 (Ex10B2)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- Revision of Ex10B1 – Clean, power off stall - recovery at incipient stage.
- **Stalling with power/flap/landing configuration:**
  - **a.** Teach/practise effect of power on the stall - SSR
  - **b.** Teach/practise effect of flap – SSR(include wing drop)
  - **c.** Teach/practise full stall in landing configuration - SSR
- **Recovery from the stall at the incipient stage:**
  - **e.** Recovery at the incipient stage in landing configuration (simulated final approach)
  - **f.** Recovery at the incipient stage in the turn with approach configuration (simulated base to final turn)
  - **g.** Recovery at the incipient stage in the departure turn with and without take-off flap setting (simulated turn after take off)
  - **h.** Checks after stalling – FREDA

- **Recovery to base student to practise:** Cruise descent and level off and items as seen appropriate from the overview
- **Recovery to base instructor to:** Assess base, final approach and landing and teach items as seen appropriate from the overview

POST FLIGHT & DEBRIEF: As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xiii Ex10b page 181

This lesson, compared to the first stalling lesson, teaches the student to recognise and recover from more realistic situations that might be encountered. It teaches the student the skills to prevent stalling in the circuit so therefore the following techniques must be carried out with good skill and accuracy before moving onto the next lesson

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Effect of power & flap on the stall Omitted / Re-teach / Revise
- ☐ Recognising the signs of the stall (full & incipient) in approach configuration Omitted / Re-teach / Revise
- ☐ Recognising the signs of the stall (full & incipient) in landing configuration Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Recover at the incipient stage in simulated final approach Omitted / Re-teach / Revise
- ☐ Recover at the incipient stage in simulated base to final turn Omitted / Re-teach / Revise
- ☐ Recover at the incipient stage in simulated turn after take off Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

The Honourable Company of Air Pilots

Flight Lesson Plans

Phase 2
Circuits

(Ex 12-14)

Phase 2 Overview

During Phase 2 Exercises 12 to 14 are to be completed to a competent standard, as shown in the Lesson Plans.

The Threat Error Management points shown below must all be covered, in addition to those in Phase 1, before moving on to Phase 3. The exact point at which each is covered within the lessons is left to the instructor to decide dependent on the individual student and lesson circumstances.

Threat Error Management:

Threat	Consequence	Mitigation
Concentration of aircraft in the circuit	Collision	Lookout/spacing/RT/spatial awareness/right of way
Use of flap at high speed/ Premature flap retraction after take-off	Over stress the aircraft Sink	Vfe/LOI After take-off checks
Engine cooling/heating	Engine malfunction	Monitor gauges
Repeatedly flying over populated Areas	Complaints	Noise abatement procedures
System/Engine problems	System/Engine failure	Circuit checks/emergency procedures
Lack of theoretical knowledge	Incident/accident	Air Law & Operational Procedures Exams pass
Medical fitness to fly solo	Incident/accident	Medical held
Insufficient runway performance	Incident/accident	Performance calculations (FM/POH)
Unstable approach	Loss of control/ runway excursion	Establish stable approach, go-around if approach not stable in accordance with established criteria

During Phase 2 the instructor should ensure that the student remains familiar with items in the Phase 1 Overview. The exact point that this is carried out will be determined by the instructor on a flight by flight basis.

In addition to the above, radio failure procedures are to be taught during this phase. This is to be done when deemed appropriate by the instructor but the student must be competent to deal with a radio failure during his/her first solo flight.

	TEACH	PRACTISE	COMPETENT
Radio Failure	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

CIRCUIT TRAINING

Exercises 12 and 13 are combined into the same lesson, and this lesson is then repeated on a number of occasions. These lesson plans detail only four "circuit sessions" but they are to be repeated until the student achieves a competent standard.

It is extremely important to emphasise the need for a stable approach. It is strongly recommended that the following criteria should be achieved by 300' AGL or a go-around should be flown:

1. On intended approach path
2. Aircraft configured in the landing configuration
3. IAS at calculated approach speed (+10/-0 kts)
4. Clearance received (if appropriate)
5. Runway correct and clear

The handling of emergencies within the circuit are to be taught and practised at the discretion of the instructor.

Flapless and glide approaches and cross wind techniques are introduced prior to first solo but covered in more detail as part of circuit consolidation.

List of Flight Lessons in this Phase

Flight Lesson 10 - Ex 12 & 13
Flight Lesson 11 - Ex 12 & 13
Flight Lesson 12 - 10B(3) and 12 & 13
Flight Lesson 13 - Ex 14 (following Ex 12 & 13 if required)
Flight Lesson 14 - Flapless Approach and solo consolidation
Flight Lesson 15 - Glide Approach and solo consolidation
Flight Lesson 16 - Crosswind Technique and solo consolidation
Flight Lesson 17 - Short and Soft Field Technique and solo consolidation

CIRCUIT EMERGENCIES

The student needs to be competent in all of the following emergencies prior to first solo.

- ☐ Abandoned take-off
  Directional control/ effective braking
  Use of flying controls to protect nosewheel/counter crosswind.
  - RT Call

- ☐ Engine failure after take-off
  Maintain airspeed – establish glide
  Landing area selection
  Aircraft configuration for landing
  - Cockpit checks/passenger safety
  - RT - Mayday

- ☐ Partial engine failure after take-off
  - Aircraft may still have some power enabling different options (Decision making)
  - Maintain airspeed/attitude control
  - Aviate/Navigate/Communicate

- ☐ Mis-landing and subsequent go-around (From bounce or balloon)
  Power/attitude control – establish safe climb
  Safe and timely changes to aircraft configuration during climb
  - RT Call

- ☐ Missed approach/Go-Around
  Power/attitude control – establish safe climb
  Safe and timely changes to aircraft configuration during climb
  RT Call, comply with any local procedures

EMERGENCIES	TEACH	PRACTISE	COMPETENT
Abandoned take-off	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Engine failure after take-off	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Partial engine failure after take-off	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Mis-landing and go-around (bounce/balloon)	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:
Missed approach	DATE:	DATE:	DATE: INSTRUCTOR: STUDENT:

FIRST SOLO AND SOLO CONSOLIDATION

- Before sending the student on their first solo flight, the instructor is to ensure all necessary exercises including emergencies have been completed, the student is competent. and have been signed for accordingly in the student record.
- The student must have read, understood and signed the school's Operations Manual prior to their first solo flight.
- It is strongly recommended that the student passes the Air Law and Operational Procedures examinations before their first solo flight.
- A medical (at least Class 2) is to have been issued by an AME to the student before first solo is permitted– a certified copy should be placed into the student record. Before the first solo flight, the supervising instructor is to ensure that a current medical certificate is held by the student.
- The first solo flight is to be one circuit and a full stop landing.
- Circuit consolidation, of approximately 3 hours, is to be used to practise all circuit types and to increase the student's confidence. The exact format of each consolidation flight is to be determined by the instructor.
- It is advised not tell the student that their next lesson will probably include their first solo – this may lead to worry and possibly a nervous performance below the standard to allow the solo flight to go ahead. The student will be disappointed that they aren't up to standard and may cause issues with confidence in the future.
- The student of an FI(R) will need to be authorised by an un-restricted FI in order to be sent on their first solo. It is strongly recommended that the authorising instructor flies with the student before sending them off solo. For the reasons stated above, don't tell them this is why they will be flying with a different instructor on their next lesson – say it is a normal standardisation flight, to assess how they have been taught, rather than directly assessing their performance.
- Remember only the FIRST solo is Ex14 – subsequent solo circuits are just 'solo consolidation', Ex12&13.
- Be creative as the instructor teaching/supervising the circuit consolidation lessons. Include all the circuit types including short/soft field techniques whenever possible.
- Supervise solo flights from a suitable location to enable effective supervision. For first solo, it is strongly recommended to supervise from the control tower.
- If in doubt, there is no doubt - if, even after completing their first solo, a student is not up to solo standard on subsequent flights, don't authorise solo until they again achieve a competent standard. This often happens on the next dual flight after their first solo. Should this occur, reassure the student. Solo standard usually returns on the next dual flight.
- For a student to be sent on any solo circuit detail, the weather conditions must be favourable. The visibility, crosswind and cloudbase should be such that a diversion to an alternate aerodrome can be safely achieved, in the event of the first airfield becoming closed (e.g. blocked runway).

SYLLABUS CHECK LIST – EASA Ref: AMC 1 FCL.210.A (c) 2

EASA Ref.	Exercise	Notes
(xiii) Ex 10b Stalling	(A) safety checks; (B) symptoms; (C) recognition; (D) clean stall and recovery without power and with power; (E) recovery when a wing drops; (F) approach to stall in the approach and in the landing configurations, with and without power and recovery at the incipient stage.	
(xv) Ex 12 Take-off and climb to downwind position	(A) pre-take-off checks; (B) into wind take-off; (C) safeguarding the nose wheel; (D) crosswind take-off; (E) drills during and after take-off; (F) short take-off and soft field procedure/techniques including performance calculations; (G) noise abatement procedures.	
(xvi) Ex 13 Circuit, approach and landing	(A) circuit procedures, downwind and base leg; (B) powered approach and landing; (C) safeguarding the nose wheel; (D) effect of wind on approach and touchdown speeds and use of flaps; (E) crosswind approach and landing; (F) glide approach and landing; (G) short landing and soft field procedures or techniques; (H) flapless approach and landing; (I) wheel landing (tail wheel aeroplanes); (J) missed approach and go-around; (K) noise abatement procedures.	
(xvii) Ex12/13 Emergencies	(A) abandoned take-off; (B) engine failure after take-off; (C) mislanding and go-around; (D) missed approach.	
(xviii) Ex 14 First solo	(A) instructor's briefing, observation of flight and de-briefing; Note: during flights immediately following the solo circuit consolidation the following should be revised: (a) procedures for leaving and rejoining the circuit; (b) the local area, restrictions, map reading; (c) use of radio aids for homing; (d) turns using magnetic compass, compass errors.	

LESSON 10 - EXERCISE 12 & 13 – CIRCUITS

DURATION 1.00

Aim: To learn to fly the standard circuit pattern and the normal landing technique

Threat Error Management:

Threat	Consequence	Mitigation
Concentration of aircraft	Collision	Lookout/spacing/RT/spatial awareness/right of way
Use of flap at high speed	Overstress aircraft	Vfe/LOI
Unstable approach	Loss of control	Maintain stable approach

PRE FLIGHT:

- Pre-flight brief on the standard circuit and normal landing (Ex 12 & 13)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

  - **AIREX:**

- Revise pre take-off and runway checks
- Normal take-off, Climb upwind and crosswind to circuit height
  Revise after take-off checks; drift correction.
- Turn to downwind and downwind leg
  Spacing from runway / Spacing against other aircraft / Drift correction
  Reference points / RT Call
  Pre-landing checks
- Base leg
  Configuring the aircraft
  Drift correction
  Assessment of rate of descent/flight path
  Anticipation and technique for turn onto Final Approach
- Final Approach – Stable Approach – If not stable by 300'agl go around
  Control of approach path / Landing Configuration / Correct IAS
  Clearance received (if appropriate)
  - Runway correct and clear
- Landing flare
  Where to look
  Throttle/attitude control
- Ground roll - Use of flying controls and brakes
- Touch and Go procedures

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

During this exercise the student will acquire the skills necessary to operate an aircraft within the Aerodrome Traffic Zone and develop the ability to take-off and land safely. This lesson will need to be repeated a number of times before the student gains the required skill and accuracy.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ Pre T/O and runway checks	Omitted / Re-teach / Revise
☐ Normal take-off	Omitted / Re-teach / Revise
☐ Climb upwind and crosswind	Omitted / Re-teach / Revise
☐ Downwind leg	Omitted / Re-teach / Revise
☐ Base leg	Omitted / Re-teach / Revise
☐ Final Approach	Omitted / Re-teach / Revise
☐ Stabilised Approach	Omitted / Re-teach / Revise
☐ Landing flare	Omitted / Re-teach / Revise
☐ Ground roll	Omitted / Re-teach / Revise
☐ Touch and go	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 11 - EXERCISE 12 & 13 – CIRCUITS FLAPLESS/ GLIDE APPROACH & EMERGENCIES

DURATION 1.00

Aim: To continue practising the circuit. Introduction of flapless and glide approaches plus introduction of circuit emergencies.

Threat Error Management:

Threat	Consequence	Mitigation
Engine cooling/heating	Engine malfunction	Monitor gauges
Repeatedly flying over populated areas	Complaints	Noise abatement
System/engine problems	Systems/engine failure	Pre-landing checks/ emergency procedures

PRE FLIGHT:

- Pre-flight brief on continuing practise of Ex12 and 13 and introduction of emergencies and flapless & glide approach (if deemed appropriate by the instructor).
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- **Revise general circuit procedures**

- **Flapless approach;**
  Nose attitude
  Speed control / revised V_{REF} / less power required
  Approach flight path same but nose attitude higher
  Landing flare

- **Academic glide approach (Final stage of Forced Landing procedure);**
  Position to close the throttle
  Judgement of touchdown point (point of constant reference)
  Undershoot/overshoot corrections – Flap/Turns/sideslip
  Speed control
  Landing flare

- Circuit emergency(s) from overview (EX 12E & 13E)

POST FLIGHT & DEBRIEF:
As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

During this exercise the student will continue to acquire the skills necessary to operate an aircraft within the Aerodrome Traffic Zone and to take-off and land safely. Introduction of circuit emergencies add additional learning points. At least 2 lessons will be required to cover all items and allow the student to achieve competency.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ Fly the standard circuit	Omitted / Re-teach / Revise
☐ Flapless circuit & approach	Omitted / Re-teach / Revise
☐ Glide circuit & approach	Omitted / Re-teach / Revise
☐ Selected emergencies	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

Aim: To revise stall avoidance.

Threat Error Management:

HASELL Checks

Revise circuit checks and drills

PRE FLIGHT:

- Pre-flight brief on Stalling Part 3 (Ex10B3)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- **Student practise –**Start; Taxi; Take-Off; Climb to a suitable area for stalling.
- **Revision of incipient recoveries:**
  - **a.** In the approach configuration (simulated turn from base to final)
  - **b.** In the landing configuration (simulated final approach)
  - **c.** In the departure turn (simulated turn after take off)
  - **d.** Checks after stalling – FREDA

- **Recovery to base student to practise:** Rejoin and items as seen appropriate from the overview
- **Recovery to base instructor to:** Allow the student to plan and execute a suitable circuit join. Standard RT calls.
- **Circuits:** Practise normal circuits

- Review selected circuit emergency from overview.

POST FLIGHT & DEBRIEF:
As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

An opportunity to refresh stalling prior to the student being authorised for solo flight. Lesson will be a split between stalling and circuit practice. If student is deemed safe and all circuit items have been covered by the end of this lesson a First Solo can be authorised.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ All relevant checks and drills	Omitted / Re-teach / Revise
☐ Incipient – stall on final turn	Omitted / Re-teach / Revise
☐ Incipient – stall on final approach	Omitted / Re-teach / Revise
☐ Incipient – stall on departure turn	Omitted / Re-teach / Revise
☐ Circuit flying – all aspects	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 13 - EXERCISE 14 FIRST SOLO

DURATION 0.20

Aim: To safely fly a circuit of the airfield for the first time unaccompanied.

Threat Error Management:

Threat	Consequence	Mitigation
Lack of theoretical knowledge	Incident/accident	Air Law & Operational Procedures Exams pass
Unfit to fly	Incident/accident	Medical held

PRE FLIGHT:

- Instructor to be satisfied that weather and traffic levels are suitable for a First Solo
- Brief before solo:
  Requirements for the flight
  Action in the event of an unsatisfactory approach or baulked landing
  Ensure cockpit secured for solo flight

AIREX:

- Student to fly a circuit

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xviii Ex14 page 182

Student has reached a safe level of flying skill to be able to fly a circuit solo.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

- ☐ Fly the circuit — Omitted / Re-teach / Revise
- ☐ Use of standard RT — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 14 - EXERCISE 13 FLAPLESS APPROACH

DURATION Dual 0.30 Solo 0.30

Followed by solo consolidation

Aim: To revise circuit flying, including a flapless approach and landing and carry out solo consolidation.

Threat Error Management:

Threat	Consequence	Mitigation
Insufficient performance	Incident/accident	Performance calculations (FM/POH)

PRE FLIGHT:

- Pre-flight brief on flapless approach and landing
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- Revise general circuit procedures
- Revise Flapless approach
- Carry out solo consolidation under instructors supervision

POST FLIGHT AND DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

A lesson to refresh circuit procedures including the flapless approach. Student to consolidate dual with solo practice.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ Circuit flying – all aspects	Omitted / Re-teach / Revise
☐ Final Approach – flapless landing	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 15 - EXERCISE 13 GLIDE APPROACH

Followed by solo consolidation

DURATION Dual 0.30 Solo 0.40

Aim: To revise circuit flying, fly a glide approach and landing and carry out solo consolidation.

Threat Error Management:

Threat	Consequence	Mitigation
Insufficient performance	Incident/accident	Performance calculations (FM/POH)

PRE FLIGHT:

- Pre-flight brief on flapless approach and landing
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- Revise general circuit procedures
- Revise Glide approach;
- Carry out solo consolidation under instructors supervision

POST FLIGHT AND DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

A lesson to refresh circuit procedures including the glide approach. Student to consolidate dual with solo practice.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ Circuit flying – all aspects	Omitted / Re-teach / Revise
☐ Final Approach – glide approach	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 16 - EXERCISE 12 & 13 CROSSWIND TAKE-OFF AND LANDING
Carried out when conditions dictate and followed by solo consolidation if suitable

DURATION Dual 0.30 Solo 0.45

Aim: To safely handle the aircraft during take-off and landing in crosswind conditions.

Threat Error Management:

Threat	Consequence	Mitigation
Insufficient performance	Incident/accident	Performance calculations (FM/POH)

PRE FLIGHT:

- Pre-flight brief on Crosswind Take-off and Landing (Ex12&13)
- Weather and NOTAM brief
- **Student to practise:** Items covered by instructor previously
- **Instructor to teach:** Items as seen appropriate from the overview

AIREX:

- Calculation of crosswind component
- Use of elevator/aileron to counter wind effects taxying
- Take-off and initial climb
  Anticipation and prevention of weathercocking
  Drift allowance when airborne on all circuit legs
- The approach
  Aircraft configuration
  Drift allowance
- The landing
  Wing down or crab to offset for drift
  Use of rudder/aileron to align aeroplane with landing path just prior to touchdown
  Control after landing
- Revise mislanding and go-around (bounce/balloon)
  Power/attitude control
  Aircraft configuration climbing away

POST FLIGHT AND DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

Student should now be developing confidence having flown 4 post solo sessions. Further skills are learnt in this lesson that will equip the student with the ability to operate in varying wind conditions. Student to consolidate dual with solo practice.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ Circuit flying – all aspects	Omitted / Re-teach / Revise
☐ Drift allowance	Omitted / Re-teach / Revise
☐ Mislanding/Go around	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 17 - EXERCISE 12 & 13 SHORT & SOFT FIELD TAKE-OFF AND LANDING

Followed by solo consolidation

DURATION Dual 0.30 Solo 0.45

Aim: To take off and land in minimum distance.

Threat Error Management:

Threat	Consequence	Mitigation
Insufficient performance	Incident/accident	Performance calculations (FM/POH)

PRE FLIGHT:

- Pre-flight brief on Short & Soft Field Take-off and Landing (Ex12&13)
- Weather and NOTAM brief
- **Instructor to teach:** Calculation of TODR and LDR. Compare with TODA and LDA. Other items as seen appropriate from the overview
- **Student to practise:** Performance calculations and items covered by instructor previously

AIREX:

- Runway conditions, short field technique

- Short field take-off
  Aircraft configuration
  Control of lift off
  Best angle climb out to clear obstacle – convert to best rate

- Short field landing
  Aircraft configuration
  Approach picture
  Speed control
  Landing flare
  Control after landing/maximum effective braking to stop

- Repeat take-off and landing sequences using soft field techniques

POST FLIGHT AND DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xv & xvi Ex 12 & 13 page 182

Student should now be developing confidence having flown 3 post solo sessions. Further skills are learnt in this lesson that will equip the student with the ability to operate off varying types of runway. Student to consolidate dual with solo practice.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ TODR & LDR calculations	Omitted / Re-teach / Revise
☐ Short field take-off	Omitted / Re-teach / Revise
☐ Soft field take-off	Omitted / Re-teach / Revise
☐ Best angle of climb	Omitted / Re-teach / Revise
☐ Short field landing	Omitted / Re-teach / Revise
☐ Soft field landing	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

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Flight Lesson Plans

Phase 3

Advanced Handling & Navigation (Ex 15-19)

Phase 3 Overview

During Phase 3 Exercises 15 to 19 are to be completed to a competent standard, as shown in the Lesson Plans.

The Threat Error Management points shown below must all be covered, in addition to those from Phase 1 and 2. The exact point each is covered is the decision of the instructor depending on the individual student.

Threat Error Management:

Threat	Consequence	Mitigation
Blind spots	Collision	Lookout
Loss of bearings	Becoming lost	Anchor points
Breach of Low Flying regulations	Potential litigation	Define platform altitude
Engine failure	Actual forced landing	Carb heat/ engine warming
Low flying aircraft	Collision	Focus on lookout below
Confined airspace due weather	Collision	Weather awareness
Poor landing area	Unsuccessful landing	Landing area selection
Errors in measuring/ calculating navigation data	Getting lost	Gross error checks
Feature misidentification	Getting lost	Flight planning - studying route & waypoints at planning stage
Other aircraft	Collision	Maintain lookout whilst planning diversion
Terrain Clearance	CFIT	Minimum Operating Altitude
Other circuit traffic	Collision	Correct joining procedures/RT at unfamiliar aerodrome
Unfamiliar runway shape/ size/surface	Runway over-run/ excursion	Correct landing configuration/ technique & performance planning
Inadequate terrain clearance	CFIT./.Contravene low flying rules	Correct altimetry/map reading/planning
Illusion of speed/sideslip at low altitude	Stall/Spin	Use of instruments(ASI and balance ball)
Poor lookout whilst using radio aids	Collision	Maintain effective lookout
Physiological sensations	Spatial disorientation	Trust instruments
Instrument limits	Erroneous data accepted by pilot	Checks and know limits

During Phase 3 the instructor should ensure that the student remains familiar with items in the Phase 1 and 2 Overview. The exact point that this is carried out will be determined by the instructor on a flight by flight basis.

Additional Notes for Navigation Training

Lesson 27 – Dual Navigation 1 (Ex 18A)

The primary aims of this exercise are:

- **To teach how to conduct pre-flight planning of a navigation route, including Threat and Error Management.**
- **To teach how to conduct airborne navigation technique / work-cycles to achieve visual navigation.**

Brief for this exercise based on the flight planning for a simple triangular route. The total flight time for this route should be approximately one hour with each leg covering between approximately 15 to 20 minutes of flight time. Teach chart preparation including the selection of suitable fix points. The students should carry out the pre-flight inspection, solo engine start, Taxiing, checks prior to take-off and the take-off. Teach or get the student to practise a short field or soft field take-off.

After take-off and initial climb take control and teach how to identify the start point and carry out the pre-WHAT checks – checking the **W**eather ahead, then **H**eading, **A**ltitude and **T**ime from the plog. Once over the start point note down the time and start the stopwatch. Establish the aircraft straight and level, in trim, and on track, teach the gross error check. Teach the repetition at this stage of the WHAT check to confirm that the planned values on the plog are being flown, and confirm the next fix and the time to look for it. Stow the map and hand over control to the student to fly straight and level. Ask the student to complete the en-route checks (usually FREDA or similar).

Not less than 2 minutes before the fix, take control back and teach how to fix the position of the aircraft. Demonstrate the working cycle from watch/stopwatch, to map, to ground. Having fixed the position, mark this on the chart and teach how to correct for any error both to track and ETA. Adjust the heading appropriately and once again hand over control to the student to maintain straight and level flight.

With approximately 2 minutes to run to the turning point, take control and teach the actions to identify the waypoint and execute the turn onto the next leg including WHAT checks and gross error check.

During the second leg the emphasis now changes with the student given practice in completing the navigation tasks whilst the instructor flies the aircraft. Again, the exception is the portions of the leg when the map is stowed, during which the student should be in control.

For the final leg, the student can practise the navigation whilst flying the aircraft.

The student can organise the rejoin, and fly the circuit and landing. To prove the accuracy of the student's estimate for the field, it may be useful to join in the overhead. Arriving in the overhead places the aircraft in a suitable position to practise a forced landing.

Lesson 28 – Dual Navigation 2 (Ex 18A)

The primary aims of the second navigation exercise are:

- **To teach how to divert off track to avoid weather and return to track once clear.**
- **To teach the en-route diversion technique from a known position to a suitable alternate destination.**

A thorough briefing will be required before this flight lesson is conducted, particularly the techniques to be used for the diversions and the threats or errors which could require one. Hopefully, the student will be able to plan the route and carry out all the pre-flight actions, including threat assessment**.** To save wasted effort, the student need only plan two legs, each approximately 20 minutes flight time (the third leg will be an en-route diversion back to the airfield).

The student should carry out the start, taxi and take-off. He can then climb to the start point and set course on the first leg. The student should be capable of navigating to the first turning point with the minimum of instructor input using the techniques taught in the previous lesson.

On arriving at the turning point, again the student should be able to identify the turning point and set course along the next leg. Once the aircraft is successfully established on track, take control and teach the correct technique to leave track to avoid weather/obstacle, parallel track if appropriate, then to rejoin track – a dog-leg diversion. If possible, try to rejoin track before the fix so that the success of the dogleg technique is confirmed. After the fix, allow the student to practise this dogleg diversion, rejoining track before the turning point.

On reaching the second turning point, take control and teach how to plan and perform a diversion to an alternative destination – in this case the airfield. Start by nominating a suitable start point. Draw a line on the chart from this point to destination marking on suitable fix(s). Measure both the track and distance (use of a simple plotter is acceptable but a good estimate by eye/thumb will still be effective) and calculate heading, groundspeed and time using MDR techniques. Once the planning is complete, hand control back to the student as from this point onwards, the techniques to start and then navigate this leg are no different to any other leg previously flown.
Once again, be constructive on the use of the rejoin and circuit to teach/student practise of short-field/flapless/glide approach.

Lesson 29 – Dual Navigation 3 (Ex 18A)

The primary aims of this exercise are:

- ***To revise all previously taught techniques, including Threat and Error Management.***
- ***To "landaway" at another airfield.***
- ***To cross a MATZ or negotiate controlled airspace.***
- ***To teach the procedure to be carried out if lost.***

Brief covering the topics listed in the aims above. The student can plan the route to and from a selected airfield. Include a MATZ crossing or controlled airspace entry. Discuss the R/T formats required. The student should be able to carry out all the normal planning without much assistance. Ensure that the landing and take-off performance at the landaway airfield is calculated using the aeroplane Flight Manual.

The student should depart and set course. Throughout the flight the student's task is to fly the aircraft and navigate using the previously taught techniques. Approaching the MATZ/controlled airspace boundary, take responsibility for the R/T and teach the correct initial R/T call, reply and read-back of the clearance. After leaving the MATZ/controlled airspace the student resumes responsibility for the R/T. Teach how to join at the destination airfield. Allow the student to complete the circuit and land. On the ground, teach the procedures for refuelling and booking in/out.

After departure and settled on track for the return flight, an in-flight diversion should be practised. This revision places the aircraft in a position from which to teach the lost procedure.

Do a "training fix" with D&D to illustrate this facility to the student.

Next, teach the actions should the radio be unavailable or the assistance from ATC ineffective. Teach to read from ground to map. Identify any distinctive ground feature to fix position positively (a line feature leading back to track or a prominent fix point). Re-calculate the route. If no fix or line feature is available, then check actual heading flown, DI alignment and time. From the last confirmed fix, plot the track actually flown for the appropriate time to make a DR fix. Plot this fix on the map and construct a "circle of uncertainty", radius 10% of the distance flown since the last reliable fix. Select a line feature on the map outside the circle of uncertainty, and set heading towards it, map reading from ground to map. On reaching the line feature, fly along it until the position is established.

The result of this teaching should give a fix on the chart, from which the student can practise calculating an in-flight diversion to return the aircraft to the airfield.

Lesson 32 – Dual Navigation 4 (Ex 18B)

The primary aims of this exercise are:

- ***To teach the actions prior to descending.***
- ***To teach the difficulties with map reading at low level.***
- ***To teach the effects of wind and turbulence.***
- ***To teach the join and circuit at low-level (simulated bad weather circuit).***

NOTE: This lesson is most effective when there is sufficient surface wind strength to give significant drift. However, if the surface wind is so strong it generates significant turbulence then the teaching points of the exercise are likely to be lost

Brief the effect of operating at low-level on the ability to see features on the chart. If operation at low-level is anticipated then these factors should be considered at the planning stage. Discuss the checks recommended before descent and the configuration to be used, and revise the low flying rules from the Rules of the Air Regulations (sometimes referred to as the 1000' and 500' rules). Brief the visual effects created by the wind at low-level, including the false sense of speed and the tendency to interpret drift wrongly in the turn as an out of balance condition. Brief the effects of turbulence. Brief the bad weather circuit and landing as a further variation of the precautionary forced landing procedure covered during Exercise 17. As with the previous navigation lessons, the student should be able to plan a simple route and carry out all the pre-flight actions.

The student can practice the departure and set course on the first leg of the planned route. Once established, take control and teach the safety checks before descending to low-level. If the need to operate at low level is due to poor weather then revise the adoption of the slow, safe cruise configuration and its effect on the planned ETA.

At low level, teach the changes in features that are now visible, as well as the need to anticipate ground features coming into view. Demonstrate the value of being able to follow a suitable line feature to achieve the next turning point. When following a line feature, revise the need to keep the feature on the left but teach maintenance of awareness of heading and time. At the next turning point, climb the aircraft back up to the normal operating altitude. Hand control back to the student to fly the second planned leg, initially at the normal planned altitude. Once established on track, simulate a lowering cloud base ahead and allow the student to practise descending to and completing the leg at a low level.

On completion of the leg, teach the wind effects by flying a racetrack pattern discussing on each leg the precise effect the wind is having. Also, teach the need to increase power, if required, to maintain the indicated airspeed during the turns. Allow the student to practise the turns whilst maintaining airspeed and balance.

On completion of this part of the exercise, the student can then practise planning a diversion leg to return to the field, at low-level if possible. Take control as the circuit is reached, to teach the bad weather join and circuit to land.

Lesson 33 Dual Navigation 5 (Ex18C)

In common with the previous lessons, the success or otherwise of the airborne part of this exercise is often determined by the quality of the ground briefing given before the lesson. If, once airborne, the student demonstrates a weak understanding of the correct interpretation of the cockpit indications, the teaching will become protracted and possibly only lead to further confusion.
The exact format for teaching this exercise will depend upon various factors including the equipment fit of the aircraft to be used, the location and availability of the beacons and their relative position to the airfield. To meet the syllabus requirements the following elements must be included:

- How to select, identify and display the radio beacon correctly.
- Obtaining a position fix using two VORs.
- Intercepting and maintaining a VOR radial both “TO” and “FROM” the VOR including the indications on passage over the VOR.
- Orientation relative to the NDB
- Homing to the NDB.
- Modes of DME operation – distance, groundspeed and time to run.

During the teaching of these items it should be emphasised that the aircraft is still being operated in visual conditions under VFR so lookout must not be compromised. Note that there is no requirement in the PPL(A) syllabus to be able to carry out radio navigation whist instrument flying.
Another important point of technique that should to be emphasised is the need to fly selected headings to achieve the desired needle indications. Do not allow the student to chase the needles endlessly!

Lesson 35 - Dual Navigation 6 (Ex18C - GPS)

A syllabus of training for the use of GPS as an aid to VFR navigation has been formulated by The Royal Institute of Navigation (internet link to the RIN website: http://www.rin.org.uk/Uploadedpdfs/ItemAttachments/GPS%20Syl2011%20Instructors%20Mar%2011.pdf).

This syllabus is comprehensive and comes highly recommended. As with the previous lesson the exact nature of the lesson content is determined by the availability of GPS to the student – a panel mounted GPS receiver is not a common feature of most training aeroplanes. The training will by necessity have to be based on the particular make/model of GPS receiver with reference to the manufacturers user guide.

As a minimum the following points should be covered during the initial navigation training:

- How to initialise the unit – checking database and satellite signal integrity.
- How to load, check, and activate a planned route, either manually or through another electronic device, and the importance of doing so before flight.
- How to use the “direct to” function (if available).
- How to integrate the use of GPS into the normal visual navigation technique.

As the number of VORs and NDBs reduces in the near future, reliance on GPS as an aid to navigation will become even more common. It is important that the instructor fraternity embrace the technology and include it as an essential part of the training syllabus.

Lesson 36 – Dual Navigation 7 (Ex18B – Navigation in Low Visibility VMC (DVE)

This lesson builds provides a practical application for the skills taught in Lesson 26 – the integration of instrument scan within VMC flight. No pilot should intentionally enter IMC unless an instrument rating is held and is valid. However, flight in VMC but at the minimum visibility of only 1500 metres also requires good instrument flying skills. Flight over water in otherwise good visibility but without a defined horizon will often require a competent level of instrument flying ability. Another and particularly hazardous scenario is flight at low level in deteriorating weather where vertical situational awareness will be challenging and stressful and has the potential of quickly becoming overwhelming.

Instrument flight training in support of cross country navigation must therefore be more than teaching temporary control whilst a 180° turn is achieved. Lowering cloud and poor visibility may well develop behind the pilot particularly in high ground regions of the UK. The pilot may be required to combine their instrument flying skills over a sustained period. Work load will be high; maintaining a good situational awareness whilst coping with potentially distracting ATC messages although there to assist. Operations at low level are particularly demanding and map reading can prove difficult.

Fatigue is a major factor and the pilot should be taught to recognise the early signs of the "leans" and be able to prevent any potential for loss of control. The pilot should also be able to confidently enact a recovery from a spiral dive. Therefore, encourage the adoption of the IFR safety altitude of 1000' AGL within 5 Nm of the intended route as best practice whenever low visibility is encountered. The student and pilot must be left in no doubt in the wisdom of avoiding low level flight in poor visibility – even though the flight conditions may be within the licence privileges.

Cross-referencing with the flight instruments is always necessary in low visibility. The possibility of a vacuum pump failure or an underperforming attitude indicator gyro is high and may be the catalyst for disorientation and loss of control.

Flying at low level in poor visibility and undulating ground may lead to spatial disorientation. Masts, wind farms and other obstacles become major threats. An assessment of the aircrafts attitude normally referenced to the natural horizon may become impracticable and confused. The illusions from drift can cause the pilot to over control particularly in turns. A minimum safe cruise speed therefore should be adopted and suitable flap, if available, deployed to aid forward field of view. Angles of bank greater than 20° should be discouraged as larger angles may more easily lead to a loss of control. The turning radius reduces with speed which compensates for the shallow angles of bank in the turn. At the lower speeds, the pilot will have more time to see obstacles ahead and generally have time to make better, reasoned decisions.

The first decision of the pilot should be to turn back ahead of lowering cloud and deteriorating visibility but too often optimism and pressure to get home rules. The CAA **Safety Sense Leaflet 23: 'Pilots - It's Your Decision!'** provides excellent relevant advice and should be made available to the student as essential reading.

SOLO NAVIGATION PRACTICE

The EASA PPL(A) syllabus calls for 5 hours of solo navigation practice, which includes the "Qualifying Cross Country" (a route of at least 150nm with two stops at airfields other than the airfield of departure). Practically, this will mean at least two solo navigation flights of approximately 1 hour 15 minutes duration, in addition to the Qualifying Cross Country.

The scheduling of solo practice will be driven by the normal constraints of student ability and weather. Prior to the first solo cross-country flight, it is recommended that the following items have been achieved:

1. Competency in the skills taught in Lessons 1 to 27 of this lesson guide including use of R/T.
2. A pass in the theory examinations in Air Law, Operational procedures, Flight Performance & Planning, Navigation and Meteorology.

It is also recommended that all the Navigation dual training exercises are completed before the student attempts the Qualifying Cross Country flight. Prior to any solo navigation flight, it is recommended that the supervising instructor completes a briefing certificate, which is retained on the ground in the student's record of training. In any case, the pre-flight briefing should be at least as thorough as the ones for the previous dual flights, as should the post-flight de-brief.

All solo routes should be carefully chosen (and if chosen by the student carefully monitored) to minimise problems such as airspace or high ground, unless these problems are intended to give the student specific practice. Routes should include obvious features to be used as fix points and gross error checks. The first solo route should have been flown previously dual.

Lesson 34 -The Qualifying Cross-Country Flight

For the Qualifying Cross Country flight, a certificate is to be carried by the student to be signed at each airfield visited. This is CAA form SRG/2105, available from the CAA web site.

The choice of aerodromes to be used, which do not have to lie at the corners of the 150 miles route, is likely to depend not only on airspace and weather considerations, but also on student experience and ability. There may be no need for the student to have landed at both these aerodromes dual, but the first solo landing away from base should not be at an unknown aerodrome, and any aerodrome which he has not previously landed at dual should not present problems such as short runways, unfamiliar air traffic services or crosswinds.

SYLLABUS CHECK LIST – EASA Ref: AMC 1 FCL.210.A (c) 2

EASA Ref.	Exercise	Notes
(xix) Ex 15 Advanced turning	(A) steep turns (45 °), level and descending; (B) stalling in the turn and recovery; (C) recoveries from undesired aircraft states, including spiral dives.	
(xiv) Ex 11 Spin avoidance	A. Stalling and recovery at the incipient spin stage (stall with excessive wing drop > 45°). a. From academic spin entry. b. From stall in a climbing turn with full power. c. From stall in a steep, level turn. d. From Instructor induced distractions during the stall. e. Return to normal flight from extreme recovery attitudes B. Instructor demo full spin and recovery if required	
(xx) Ex 16 Forced landing without power	(A) forced landing procedure; (B) choice of landing area, provision for change of plan; (C) gliding distance; (D) descent plan; (E) key positions; (F) engine cooling; (G) engine failure checks; (H) use of radio; (I) base leg; (J) final approach; (K) landing; (L) actions after landing.	
(xxi) Ex 17 Precautionary landing	(A) full procedure away from aerodrome to break-off height; (B) occasions necessitating; (C) in-flight conditions; (D) landing area selection: (a) normal aerodrome; (b) disused aerodrome; (c) ordinary field. (E) circuit and approach; (F) actions after landing.	

(xxii) Ex 18a Navigation	(A) flight planning: (a) weather forecast and actuals; (b) map selection and preparation: (1) choice of route; (2) controlled airspace; (3) danger, prohibited and restricted areas; (4) safety altitudes. (c) calculations: (1) magnetic heading(s) and time(s) en-route; (2) fuel consumption; (3) mass and balance; (4) mass and performance. (d) flight information: (1) NOTAMs etc.; (2) radio frequencies; (3) selection of alternate aerodromes. (e) aeroplane documentation; (f) notification of the flight: (1) pre-flight administrative procedures; (2) flight plan form. (B) departure: (a) organisation of cockpit workload; (b) departure procedures: (1) altimeter settings; (2) ATC liaison in controlled or regulated airspace; (3) setting heading procedure; (4) noting of ETAs. (c) maintenance of altitude and heading; (d) revisions of ETA and heading; (e) log keeping; (f) use of radio; (g) use of navaids; (h) minimum weather conditions for continuation of flight; (i) in-flight decisions; (j) transiting controlled or regulated airspace; (k) diversion procedures; (l) uncertainty of position procedure; (m) lost procedure. (C) arrival and aerodrome joining procedure: (a) ATC liaison in controlled or regulated airspace; (b) altimeter setting; (c) entering the traffic pattern; (d) circuit procedures; (e) parking; (f) security of aeroplane; (g) refuelling; (h) closing of flight plan, if appropriate; (i) post-flight administrative procedures.	

(xxiii) Ex 18b Navigation problems at lower levels and in reduced visibility	(A) actions before descending; (B) hazards (for example obstacles and terrain); (C) difficulties of map reading; (D) effects of wind and turbulence; (E) vertical situational awareness (avoidance of controlled flight into terrain); (F) avoidance of noise sensitive areas; (G) joining the circuit; (H) bad weather circuit and landing.	
(xxiv) Ex 18c Radio navigation	(A) use of GNSS: (a) selection of waypoints; (b) to or from indications and orientation; (c) error messages. (B) use of VHF omni range: (a) availability, AIP and frequencies; (b) selection and identification; (c) OBS; (d) to or from indications and orientation; (e) CDI; (f) determination of radial; (g) intercepting and maintaining a radial; (h) VOR passage; (i) obtaining a fix from two VORs. (C) use of ADF equipment: NDBs: (a) availability, AIP and frequencies; (b) selection and identification; (c) orientation relative to the beacon; (d) homing. (D) use of VHF/DF: (a) availability, AIP, frequencies; (b) R/T procedures and ATC liaison; (c) obtaining a QDM and homing. (E) use of en-route or terminal radar: (a) availability and AIP; (b) procedures and ATC liaison; (c) pilot's responsibilities; (d) secondary surveillance radar: (1) transponders; (2) code selection; (3) interrogation and reply. (F) use of DME: (a) station selection and identification; (b) modes of operation: distance, groundspeed and time to run.	

(xxv) Ex 19 Basic instrument flight	(A) physiological sensations; (B) instrument appreciation; attitude instrument flight; (C) instrument limitations; (D) basic manoeuvres: (a) straight and level at various air speeds and configurations; (b) climbing and descending; (c) standard rate turns, climbing and descending, onto selected headings; (d) recoveries from climbing and descending turns.	

LESSON 18 – EXERCISE 15 ADVANCED TURNING DURATION 1.00

Aim: To learn to fly level 45° AOB Turns and descending 45° AOB Turns

Threat Error Management:

Threat	Consequence	Mitigation
Blind Spots	Collision	Lookout
Loss of bearings	Becoming lost	Anchor points

HASELL/HELL CHECKS

PRE FLIGHT:

- Pre-flight brief on Advanced Turning (Ex 15)
- Weather and NOTAM brief
- **Student to practise:** Engine fire on start drill and short-field take off over 50ft obstacle

AIREX:

- Revise climbing (V_X V_Y) and climbing turns on to headings
- Student revises 30° AOB turns

Advanced Turning;

- Level 45° AOB Turns
- Use of Magnetic Compass (simulated DI Failure)
- Steep descending turns 45 ° AOB
- Stalling in the turn and recovery
- Recoveries from undesired aircraft states, including spiral dives

- **Recovery to base student to practise:**
  a. Cruise descent on recovery
  b. R/T and arrival procedures
  c. Flapless landing
  d. Actions after flight
- **Recovery to base instructor to teach:**
  a. Overhead join

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xix Ex 15 page 183

The emphasis of the lesson is to learn to fly level and descending 45 AOB turns. However the student should be able to recognise and recover the aircraft from unusual Attitudes (including Spiral Dives), and having stalled in the turn. An understanding of the principles involved and the techniques to be applied are essential. Therefore, the following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

☐ Stalling in the turn and Recovery	Omitted / Re-teach / Revise
☐ Unusual Attitudes and Spiral Dives	Omitted / Re-teach / Revise
☐ Use of Magnetic Compass	Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

☐ Fly level and descending 45 AOB turns
Omitted / Re-teach / Revise

☐ Recover the Aircraft having stalled in the turn
Omitted / Re-teach / Revise

☐ Recover the Aircraft Safely Unusual Attitudes (including Spiral Dives)
Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 19 – EXERCISE 11A SPIN AVOIDANCE

DURATION 0.45

Aim: To learn to recognise and recover the aircraft safely from the spin at the incipient stage with minimum height Loss

Threat Error Management:

HASELL Checks
Possible scenarios

PRE FLIGHT:

- Pre-flight brief on Spin Avoidance (Ex11A)
- Weather and NOTAM brief
- **Student to practise:** Normal or crosswind take off

AIREX:

- Revise climbing (Cruise/V_Y) and climbing turns on to headings
- **Revision of Full Stall, Clean, Pwr off;**
- **Spin Avoidance;**
  - Stalling and recovery at the incipient spin stage (stall with excessive wing drop > 45°)
  - From academic spin entry
  - From stall in a climbing turn with full power
  - From stall in a steep, level turn.
  - Instructor induced distractions during the stall
  - Return to normal flight from extreme recovery attitudes
- **Instructor Demonstrate (if required)**;
  - Full spin and recovery
- **Recovery to base student to practise:**
  a. Cruise descent on recovery
  b. R/T and arrival procedures
  c. Landing
  d. Actions after flight

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xiv Exercise 11 page 181

The emphasis of the lesson must be on Spin Avoidance. The student must be able to recognise the conditions that are likely to lead to an unintentional spin, and to take recovery action promptly at the incipient stage in order to recover the aircraft safely with minimum height loss. An understanding of the principles involved and the techniques to be applied are essential. Therefore, the following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

☐ Incipient Spin Recognition — Omitted / Re-teach / Revise
☐ Incipient Spin Recovery Technique — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

☐ Recover the Aircraft Safely from the Incipient Spin Stage
Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 20 - EX 16 FORCED LANDINGS WITHOUT POWER

DURATION 1.00

Aim: To learn to plan, fly an approach and to land safely in the event of a complete engine failure.

Threat Error Management:

Threat	Consequence	Mitigation
Contravene low flying rules	Potential prosecution	Define minimum altitude
Engine failure	Actual forced landing	Carb heat/ engine warm (500' Cx)
Low flying aircraft	Collision	Focus on lookout below

PRE FLIGHT:

- Pre-flight brief with Forced Landings Without Power (Ex16) as main exercise
- Weather and NOTAM brief
- **Student to practise:** Items as seen appropriate from the overview, but including short field takeoff over 50' obstacle.

AIREX:

- Short field take-off over 50ft obstacle
- During transit to training area at low-level (≤1000' AGL) teach field selection
- Revise climbing at best angle
- **insert emergency relevant to the flight**

FLWOPs:

- Demonstrate a PFL (total failure) from a suitable altitude (3000')
- Teach planning and flying pattern only
- Student practise – PFL pattern only
- Student to practise climb at Vx and Vy between PFLs
- Teach PFL, instructor introduces checks, restart drill and Mayday
- Student practise - PFL with checks, restart drill and Mayday
- Further student practise of full procedure..
- Teach actions in the event of a partial engine failure.

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include:
  a. Overhead join PFL from overhead if traffic permits

or:

  b. Glide approach & landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xx Ex16 page 183

This exercise in managing an engine failure at altitude requires the student to consider the time available and prioritise actions requires. Suitable planning and executing appropriate checklists are essential. Practice in different locations and wind conditions will be required however good skill and accuracy must, therefore, be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Suitable field selection — Omitted / Re-teach / Revise
- ☐ Planning — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Executing a planned approach — Omitted / Re-teach / Revise
- ☐ Perform relevant checklists — Omitted / Re-teach / Revise
- ☐ Making a Distress R/T call — Omitted / Re-teach / Revise
- ☐ Passenger briefing — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 21 - EX 16 FORCED LANDINGS WITHOUT POWER PART 2

DURATION 1.00

Aim: To learn to plan, fly an approach and to land safely in the event of a complete or partial engine failure.

Threat Error Management:

Threat	Consequence	Mitigation
Contravene low flying rule	Potential prosecution	Define minimum altitude
Engine failure	Actual forced landing	Carb heat/engine warm (500' Cx)
Low flying aircraft	Collision	Focus on lookout below

PRE FLIGHT:

- Pre-flight brief with Forced Landing Without Power and partial engine failure (Ex16) as main exercise.
- Weather and NOTAM brief
- **Student to practise:** Items as seen appropriate from the overview but including short field take-off performance

AIREX:

- Student practise - short field take-off over 50ft obstacle
- During transit to training area revise field selection.
- Revise climbing at best angle / best rate / cruise climb
- **insert emergency relevant to the flight**

FLWOPs:

- Student practise – PFL (total failure) from a suitable altitude (3000' AGL).
- Teach adjustment to procedure for failure at a lower altitude (2000')
- Student practise.
- Teach further adjustments to procedure for failure at 1000' AGL
- Student practise from different starting altitudes and locations.
- Teach actions in the event of partial engine failure.
- Student practise actions in the event of a partial engine failure

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include:
  c. Overhead join and PFL from overhead if traffic permits

or:

  d. glide approach & landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xx Ex16 page 183

This exercise in managing an engine failure at altitude requires the student to consider the time available and prioritise actions requires. Suitable planning and executing appropriate checklists are essential. Practice in different locations and wind conditions will be required however good skill and decision making must, therefore, be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Suitable field selection — Omitted / Re-teach / Revise
- ☐ Planning — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Executing a planned approach — Omitted / Re-teach / Revise
- ☐ Perform relevant checklists — Omitted / Re-teach / Revise
- ☐ Making a Distress R/T call — Omitted / Re-teach / Revise
- ☐ Passenger briefing — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 22 – EXERCISE 17 PRECAUTIONARY LANDING DURATION 1.00

Aim: To learn when a precautionary landing is appropriate and how to execute a safe approach to a selected landing area.

Threat Error Management:

Threat	Consequence	Mitigation
Confined airspace due weather	Collision	Weather awareness
Poor landing area	Unsuccessful landing	Landing area selection

PRE FLIGHT:

- Pre-flight brief with Precautionary Landing (Ex17) as main ex
- Weather and NOTAM brief
- **Student to practise:** Items as seen appropriate from the overview but including short field takeoff and landing performance calculations

AIREX:

- Revise short-field take-off over 50ft obstacle
- Revise PFL (Partial or total engine failure from suitable altitude)

Precautionary landing:

- Field/landing area selection
- Revise converting to slow,safe cruise configuration
- Turning technique in the slow safe cruise configuration.
- Precautionary landing pattern
- Student practises at different locations as appropriate with different simulated scenarios (wx, engine, fuel shortage, etc)

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include:
  a. Cruise descent on recovery
  b. Overhead join/ practise precautionary landing pattern if traffic permits
  c. Short field landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxi Ex 17 page 183

This exercise teaches how to manage changing conditions (environment or systems). It requires the student to consider the time available, exercise sound decision making and prioritise the actions required. Suitable planning and executing appropriate checklists are essential skills. Practise in different locations and wind conditions will be required, however good skill and decision making must, therefore, be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Suitable field selection — Omitted / Re-teach / Revise
- ☐ Planning & decision making — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Safe slow flight — Omitted / Re-teach / Revise
- ☐ Executing a planned approach — Omitted / Re-teach / Revise
- ☐ Perform relevant checklists — Omitted / Re-teach / Revise
- ☐ Making a relevant R/T call — Omitted / Re-teach / Revise
- ☐ Passenger briefing — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 23 - EXERCISE 14 SOLO SECTOR RECCE

DURATION 1.00

Aim: To safely fly a departure to the local area, practise general handling, then rejoin the circuit to land.

Threat Error Management:

Threat	Consequence	Mitigation
Loss of bearings	Becoming lost	Local area orientation Map orientation/reading
System/Engine problems	System/Engine failure	checks/emergency procedures

PRE FLIGHT:

- Instructor to be satisfied that weather and traffic levels are suitable for a solo sector recce
- Brief before solo:
  Requirements for the flight
  Action in the event of an unsatisfactory approach or baulked landing
  Action in the event of uncertainty of position including QDM (if available)
- Ensure cockpit secured for solo flight

AIREX:

- Student to fly a solo sector recce and carry out general handling as authorised by the instructor
- Rejoin the circuit and land

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xviii Ex14 page 182

Student has reached a safe level of flying skill to be able to fly to and from the local area.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates the correct use of the requisite techniques to:

☐ Fly the departure	Omitted / Re-teach / Revise
☐ Rejoin the circuit	Omitted / Re-teach / Revise
☐ Fly the circuit following the join	Omitted / Re-teach / Revise
☐ Use of standard RT	Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 24 – EXERCISE 19 BASIC INSTRUMENT FLYING 1 DURATION 1.00

Aim: To learn to fly the aircraft by sole reference to instruments

Threat Error Management:

Threat	Consequence	Mitigation
Instrument limits	Erroneous data accepted by pilot	Checks and know limits
Physiological sensations	Spatial disorientation	Trust instruments not sensations

PRE FLIGHT:

- Pre-flight brief on Basic Instrument Flying (Ex19A)
- Weather and NOTAM brief
- **Student to practise:** Normal or crosswind take off

AIREX:

- Revise selected climbing technique and climbing turns on to headings

- **Basic Instrument Flying;**
- Physiological Sensations
- Attitude Instrument Flight, Instrument Appreciation
- Instrument Limitations
- Basic Manoeuvres (S+L / IAS / Configuration)
- Climbing and descending
- Standard rate turns (Climbing/descending/on to HDGs)
- Teach & Student Practice - recoveries from unusual positions on full panel
- Teach & Student Practice - technique to recover to VFR flight from inadvertent entry into IMC (180º turn in simulated IMC)

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include:
  a. Cruise descent on recovery
  b. Overhead join/ practise precautionary landing pattern if traffic permits
  c. Short field landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxv Ex 19 page 186

The emphasis of the lesson should be on the introduction of Basic IF as a natural extension of the visual techniques that the student has already learned, and of the Selective Radial Scan. An understanding of the principles involved and the techniques to be applied are essential. Therefore, the following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Physiological Sensations Omitted / Re-teach / Revise
- ☐ Instrument Appreciation / Attitude Instrument Flight Omitted / Re-teach / Revise
- ☐ Instrument Limitations Omitted / Re-teach / Revise
- ☐ Basic Manoeuvres on Instruments Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

- ☐ Control the aircraft and monitor its performance by sole reference to Instruments Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 25 – EXERCISE 19 BASIC INSTRUMENT FLYING 2 DURATION 1.00

Aim: To consolidate the techniques required to fly the aircraft by sole reference to instruments

Threat Error Management:

Threat	Consequence	Mitigation
Instrument limits	Erroneous data accepted by pilot	Know the limits
Physiological sensations	Spatial disorientation	Trust instruments not sensations

PRE FLIGHT:

- Pre-flight brief on Basic Instrument Flying (Ex19A)
- Weather and NOTAM brief
- **Student to practise:** Normal or crosswind take off

AIREX:

- Revise a selected climbing technique and climbing turns on to headings

- **Student to Revise Basic Instrument Flying;**
- Basic Manoeuvres (S+L / IAS / Configuration)
- Climbing and descending
- Standard rate turns (Climbing / descending / to HDGs)
- Recoveries from unusual positions on full panel.
- Student Practice.-. recovery to VFR flight from inadvertent entry into IMC (180º turn in simulated IMC)

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include:

e. Cruise descent on recovery
f. Overhead join/ practise precautionary landing pattern if traffic permits
g. Short field landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxv Ex 19 page 186

The emphasis of the lesson should be on the practice of Basic IF with the student applying the Selective Radial Scan. An understanding of the principles involved and the techniques to be applied are essential. Therefore, the following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

☐ Basic Manoeuvres on Instruments Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques to:

☐ Control the aircraft and monitor its performance on Instruments to a Skills Test standard Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 26 – EXERCISE 19 MINIMUM VISIBILITY FLYING (DEGRADED VISUAL ENVIRONMENT (DVE)) DURATION 1.00

Aim: To combine visual and instrument inputs in minimum visibility

Threat Error Management:

Threat	Consequence	Mitigation
Inflight visibility	Midair collision	Configuration, lookout Radar traffic service Fly above haze layer
Air-ground visibility	CFIT	Safe altitude
Physiological sensations	Spatial disorientation	Trust instruments

PRE FLIGHT:

- Pre-flight brief on the Integrated Attitude Scan technique
- Weather and NOTAM brief
- **Student to practise:** Normal or crosswind take off

AIREX:

- Revise instrument flying during climb
- Set up poor visibility configuration on instruments - TRIM
- **Integrated Technique (use foggles or fly at night);**
- Advise to avoid flight in poor visibility
- Integrate AI into normal visual S&L scan
- Standard rate turns using integrated technique
- Climbing and descending
- Interpreting radar information for avoiding action
- **Student to practise:** Overhead join and circuit with normal landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxiii Ex 18b page 185

The emphasis of the lesson should be on the integration of the use of the Attitude Indicator (AI) into the visual techniques that the student has already learned, and the need to adopt the Selective Radial Scan when necessary. An understanding of the principles involved and the techniques to be applied are essential. Therefore, the following competencies must be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Minimising time spent in reduced visibility: Omitted / Re-teach / Revise
- ☐ The Integrated Attitude Scan Omitted / Re-teach / Revise
- ☐ Obtaining external traffic information Omitted / Re-teach / Revise

The student demonstrates the correct use of the integrated technique to:

- ☐ Control the aircraft and recover to base in minimum visibility: Omitted / Re-teach / Revise
- ☐ Interpret external traffic information Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 27 – EXERCISE 18A DUAL NAVIGATION 1 DURATION 1.00

Aim: To plan a navigation route, To learn the visual navigation technique

Threat Error Management:

Threat	Consequence	Mitigation
Errors in measuring/ calculating navigation data	Getting lost	Gross error checks
Feature misidentification	Getting lost	Flight planning and studying route

PRE FLIGHT:

- Pre-flight brief on Visual Navigation (Ex18a)
- Weather and NOTAM brief
- Teach / Practise planning a triangular route (Flight time approx 1.0 hour)
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student climbs towards starting point – practise cruise climb
- Teach start point actions – Identify, WHAT check, cross over start point on HDG and planned altitude, note time/start stopwatch, gross error check, post WHAT, calculate ETA at next fix
- Instructor revises maintenance of S & L, student practise.
- ETA of fix –2 minutes, instructor takes control – teach fix identification
  - Big features to small
  - Relate clock to map to ground
- Teach appropriate method to regain track – adjust HDG and ETA as required
- Once steady on HDG give student control to maintain S&L – FREDA
- ETA turning point -2 mins, teach identification & WHAT
- Student practise all navigation actions for 2nd leg whilst instructor flies
- Student takes full control during remainder of route. Teach other methods of regaining track as opportunity allows.

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include a PFL practice from overhead if desired on rejoin.

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxii Ex 18a page 183/4

The principles involved and the techniques to be applied in basic visual navigation need to be clearly understood and then used on the flight with reasonable accuracy before moving on to the next lesson. Knowledge of where to obtain and interpret pre flight information should also be shown to a reasonable proficiency before the next flight.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Map preparation Omitted / Re-teach / Revise
- ☐ Navigation planning calculations and completing a plog Omitted / Re-teach / Revise
- ☐ Basic visual navigation technique and work cycle Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Obtaining weather information and extracting data relevant to nav planning Omitted / Re-teach / Revise
- ☐ Obtaining and interpreting NOTAMS Omitted / Re-teach / Revise
- ☐ Departing the airfield using previously taught techniques and procedures Omitted / Re-teach / Revise

Comment on all items annotated "X" above

LESSON 28 – EXERCISE 18A DUAL NAVIGATION 2 DURATION 1.00

Aim: To consolidate basic nav technique. To learn en-route diversion techniques.

Threat Error Management:

Threat	Consequence	Mitigation
Other aircraft	Collision	Maintain lookout whilst planning diversion
Terrain Clearance	CFIT	Minimum Operating Altitude

PRE FLIGHT:

- Pre-flight brief on en-route diversion (Ex18a)
- Weather and NOTAM brief
- Student to plan route and complete all pre-flight tasks
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Revise crosswind/short-field/soft-field take-off.

- Student navigates and flies first leg to revise basic navigation technique then sets course on 2nd leg.

- Once established on 2nd leg, teach "dog-leg" diversion.
- Student practise of dog-leg diversion.

- Teach en-route diversion to new destination.
- Student practise of en-route diversion back to the airfield, if time permits.

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include a PFL from overhead (Simulated engine fire) and circuit practise as required (flapless/glide approach)

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxii Ex 18a page 183/4

Before moving on to the next lesson good skill and accuracy in basic navigation is to be shown using the principles and techniques taught on the previous flight. A clear understanding of the principles involved in diverting the aircraft are also to be shown before moving on.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Acceptable minimum weather conditions to continue VFR — Omitted / Re-teach / Revise
- ☐ Sound in-flight decision making — Omitted / Re-teach / Revise
- ☐ A 'dog- leg' diversion — Omitted / Re-teach / Revise
- ☐ An en-route diversion — Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Completing pre-flight navigation planning for route — Omitted / Re-teach / Revise
- ☐ Basic visual navigation — Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 29 – EXERCISE 18A DUAL NAVIGATION 3 DURATION 2.00

Aim: To land away. To learn procedures for CAS. To learn the Uncertain of Position and Lost Procedures

Threat Error Management:

Threat	Consequence	Mitigation
Other circuit traffic	Collision	Correct joining procedures/RT at unfamiliar aerodrome
Unfamiliar runway shape/size/surface	Runway over-run/ excursion	Correct landing configuration technique Performance planning

PRE FLIGHT:

- Pre-flight brief on landaway planning (PPR, joining procedures) CAS entry/crossing and Lost Procedure (Ex18a)
- Weather and NOTAM brief
- Student completes pre-flight planning as before including performance planning for landaway
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student carries out departure
- Teach procedures & RT for transit of CAS/regulated airspace
- Teach joining procedure at landaway airfield
- Teach booking in/out procedures
- Student departs and sets up en-route
- Student practise of in-flight diversion
- Teach uncertain of position & lost procedure
- Teach "PAN" call / Training Fix
- Student rejoins for home airfield

- **Recovery to base student to practise:** Items as seen appropriate from the overview but to include circuit emergencies as required

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxii Ex 18a page 183/4

During this exercise all previously taught techniques are to be carried out with good skill and accuracy before moving on to the next lesson. A clear understanding of aircraft performance calculations is to be shown along with an understanding of the procedures used to cross airspace. A clear understanding of the lost procedure must also be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Performance calculations using the Flight Manual Omitted / Re-teach / Revise
- ☐ How to obtain and follow a clearance in CAS/regulated airspace & understand the correct R/T procedures Omitted / Re-teach / Revise
- ☐ Applying lost procedures Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Completing navigation route after planning Omitted / Re-teach / Revise
- ☐ Liaising with ATS and joining the circuit at destination Omitted / Re-teach / Revise
- ☐ Ground procedures at destination Omitted / Re-teach / Revise
- ☐ Planning & executing a diversion Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 30 – EXERCISE 18A SOLO NAVIGATION 1 DURATION 1.00

Aim: To practise basic DR navigation - solo.

Threat Error Management:

Threat	Consequence	Mitigation
Other aircraft	Collision	Maintain Effective Lookout!

PRE FLIGHT:

- Student to plan a triangular route under supervision from the instructor (route may be a repeat of that flown dual in lesson 25 or 26)
- Weather and NOTAM brief
- Completion of Solo Navigation Briefing Certificate by Instructor & Student.
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student completes the flight solo completing a plog en-route

- **Recovery to base student to practise:** Items solo as seen appropriate from the overview.

POST FLIGHT & DEBRIEF:

Instructor to ensure that the post-flight documentation is correctly completed by the student and that the student is debriefed. The student should be asked to analyse their performance and any difficulties, problems or questions should be addressed by the instructor.

EASA Ref: AMC1 FCL.210.A (c) 2 xxiv page 185/6

As a solo exercise, this gives the student the opportunity to practise and demonstrate their ability to act as commander. Instructors should offer support, but ultimately must closely supervise the planning process, particularly weather interpretation, before authorising the flight. Completion of the Briefing Certificate will assist with ensuring adequate supervision.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable

The student demonstrates the correct use of the requisite techniques of

- ☐ Obtaining weather information and extracting data relevant to nav planning Re-teach / Revise
- ☐ Obtaining and interpreting NOTAMS Re-teach / Revise
- ☐ Map preparation Re-teach / Revise
- ☐ Navigation planning calculations and completing a plog Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes based on the student's analysis of their performance:

Date: Instructor: Student:

LESSON 31 – EXERCISE 18A SOLO NAVIGATION 2 DURATION 1.15

Aim: To practice basic visual navigation techniques - solo.

Threat Error Management:

Threat	Consequence	Mitigation
Other aircraft	Collision	Maintain Effective lookout!

PRE FLIGHT:

- Student to plan a triangular route under supervision from the instructor (route may be a repeat of that flown dual in lesson 26 or 27 but should be flown in the reverse direction and include more complex airspace/RT)
- Weather and NOTAM brief.
- Revise procedures for transitting MATZ/routing under controlled airspace/use of LARS as appropriate.
- Completion by Instructor & Student of Solo Navigation Briefing Certificate.
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student completes the flight solo completing a plog en-route

- **Recovery to base student to practise:** Items solo as seen appropriate from the overview.

POST FLIGHT & DEBRIEF:

Instructor to ensure that the post-flight documentation is correctly completed by the student and that the student is debriefed. The student should be asked to analyse their performance. Any difficulties, problems or questions should be addressed by the instructor.

EASA Ref: AMC1 FCL.210.A (c) 2 xxiv page 185/6

As a solo exercise, this gives the student the opportunity to practice and demonstrate their ability to act as commander. Instructors should offer support, but ultimately must supervise closely the planning process, particularly weather, before authorising the flight. Completion of the Briefing Certificate will assist with ensuring adequate supervision.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable

The student demonstrates the correct use of the requisite techniques of

- ☐ Obtaining weather information and extracting data relevant to nav planning Re-teach / Revise
- ☐ Obtaining and interpreting NOTAMS Re-teach / Revise
- ☐ Map preparation Re-teach / Revise
- ☐ Navigation planning calculations and completing a plog Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes based on the student's analysis of their performance:

Date: Instructor: Student:

LESSON 32 – EXERCISE 18B DUAL NAVIGATION 4 DURATION 1.00

Aim: To learn how to navigate & operate at low-level (<1000' AGL).

Threat Error Management:

Threat	Consequence	Mitigation
Inadequate terrain clearance	CFIT. Contravene low flying rules	Correct altimetry/ map reading/ planning.
Illusion of speed/sideslip	Stall/Spin	Use of instruments (ASI and Balance ball)

PRE FLIGHT:

- Pre-flight brief on Low Level Navigation (Ex18b)
- Weather and NOTAM brief
- Student completes pre-flight planning
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student carries out departure. Revise incipient stall recovery in the turn, in the slow,safe cruise configuration.
- Once established on track, teach actions prior to descent to low-level.
- Teach descent and revise slow, safe cruise configuration
- Teach navigation technique (features)
- Student practise of descent to low-level and navigation
- Teach wind effect on turning at low-level
- Student practise en-route diversion at low-level

- **Recovery to base instructor to:** Teach bad weather rejoin into circuit and bad weather circuit
- **Recovery to base student to practise:** Bad weather circuit and short-field landing

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxiii Ex 18b page 185

An understanding of the principles involved and the techniques to be applied for low level navigation are essential. The following competencies must therefore be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ Which features are visible at low level and apply this to map reading technique Omitted / Re-teach / Revise
- ☐ The effect of wind & turbulence at low level Omitted / Re-teach / Revise
- ☐ Applying noise abatement procedure Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Completing the safety checks before descending into low level navigation Omitted / Re-teach / Revise
- ☐ Correct altimetry procedures & situational awareness to ensure terrain clearance Omitted / Re-teach / Revise
- ☐ Operation in poor visibility Omitted / Re-teach / Revise
- ☐ Joining the circuit for a bad weather circuit and applying short field landing technique Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 33 – EXERCISE 18C DUAL NAVIGATION 5 DURATION 1.00

Aim: To learn how to navigate using radio navigation aids.

Threat Error Management:

Threat	Consequence	Mitigation
Poor lookout whilst using radio aids	Collision	Maintain effective lookout

PRE FLIGHT:

- Pre-flight brief on Radio Navigation (Ex18c)
- Weather and NOTAM brief
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student carries out departure
- Teach/Practise position fix using 2 x VOR (Select/Identify/Display)
- Teach/Practise intercept of selected VOR radial "To"/"From"
- Teach/Practise Correct tracking technique (Bracketing)
- Demonstrate OBI Indications transiting overhead VOR
- Teach Orientation relative to NDB
- Teach "Homing" to NDB
- Teach DME tuning, ident and functions
- Teach use of DME combined with VOR for position fixing

- **Recovery to base student to practise:** Items as seen appropriate from the overview.

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC1 FCL.210.A (c) 2 xxiv Ex 18c page 185/6

To aim of this lesson is to learn to navigate the aeroplane under VFR using radio navigation aids. However, the main emphasis when using these aids in these exercises is that their use should not detract from the lookout required and maintenance of VFR.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable.

The student demonstrates a clear understanding of the principles of:

- ☐ The VOR Omitted / Re-teach / Revise
- ☐ Transiting through a VOR overhead and the correct action to maintain track Omitted / Re-teach / Revise
- ☐ The RMI/RBI and NDB Omitted / Re-teach / Revise
- ☐ DME range/ground speed/ ETA Omitted / Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of

- ☐ Position fixing using the VOR Omitted / Re-teach / Revise
- ☐ Intercepting and tracking to/from a given radial Omitted / Re-teach / Revise
- ☐ Orientating position relative to an NDB Omitted / Re-teach / Revise
- ☐ NDB homing Omitted / Re-teach / Revise
- ☐ Using a combination of VOR & DME for a position fix Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes:

Date: Instructor: Student:

LESSON 34 – EXERCISE 18A SOLO NAVIGATION 3 (QXC) DURATION 2.30

Aim: To complete the Solo Qualifying Cross-country navigation exercise.

Threat Error Management:

Threat	Consequence	Mitigation
Other aircraft	Collision	Maintain Effective Lookout!

PRE FLIGHT:

- Student to plan the route for the QXC. Route to be decided with close liaison with the authorising instructor. Must include landaway at two aerodromes other than the departure point and be a minimum of 150 nm. Student to self-brief Weather and NOTAMs.
- Completion by Instructor & Student of Solo Navigation Briefing Certificate and Student to be issued with the QXC authorisation certificate (CAA Form SRG2105 available online) to be completed at landaway aerodromes.
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student completes the flight solo, completing a plog en-route

- **Recovery to base student to practise:** Items solo as seen appropriate from the overview.

POST FLIGHT & DEBRIEF:

Instructor to ensure that the post-flight documentation is correctly completed by the student and that the student is debriefed. The student should be asked to analyse their performance. Any difficulties, problems or questions should be addressed by the instructor.

EASA Ref: AMC1 FCL.210.A (c) 2 xxiv page 185/6

As a solo exercise, this gives the student the opportunity to practice and demonstrate their ability to act as commander. Instructors should offer support, but ultimately must supervise closely the planning process, particularly weather, before authorising the flight. Completion of the Briefing Certificate will assist with ensuring adequate supervision.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable

The student demonstrates the correct use of the requisite techniques of

- ☐ Obtaining weather information and extracting data relevant to nav planning Re-teach / Revise
- ☐ Obtaining and interpreting NOTAMS Re-teach / Revise
- ☐ Map preparation Re-teach / Revise
- ☐ Navigation planning calculations and completing a plog Re-teach / Revise
- ☐ Calculating Landing & Take-off performance using Flight Manual/POH Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes based on the student's analysis of their performance:

Date: Instructor: Student:

LESSON 35 – EXERCISE 18C DUAL NAVIGATION 6 DURATION 1.00

Aim: To learn how to navigate using GNSS/GPS in addition to visual navigation.

Threat Error Management:

Threat	Consequence	Mitigation
Poor lookout whilst using GPS (heads in)	Collision	Maintain effective lookout scan

PRE FLIGHT:

- Student plans visual route
- Pre-flight brief on GPS use and limitations
- Teach how to load & activate route in GPS unit
- Weather and NOTAM brief
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student carries out departure and starts first leg as normal
- Teach use of pre-programmed GPS route to cross-check to first waypoint
- Teach GPS tracking to 2nd waypoint
- Student practice GPS tracking to 3rd waypoint
- Teach use of "GO-TO" Function
- Student practice of "GO-TO" Function
- Simulated GPS signal/unit failure/error message – reverting to solely visual navigation techniques.

- **Recovery to base student to practise:** Items as seen appropriate from the overview.

POST FLIGHT & DEBRIEF:

As previous

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An understanding of the principles involved and the techniques to be applied for navigation using GPS are important. The following competencies must, therefore, be evident before the next lesson.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable

The student demonstrates a clear understanding of the principles of:

- ☐ The integration of DR navigation with GPS techniques. Omitted/Re-teach / Revise

The student demonstrates the correct use of the requisite techniques of:

- ☐ Checking the validity of the GPS database. Omitted / Re-teach / Revise
- ☐ Programming a route into the GPS Unit Omitted / Re-teach / Revise
- ☐ Correct technique to track the route using headings to achieve desired track & cross reference with visual navigation plan. Omitted / Re-teach / Revise
- ☐ Use of the "Go-To" Function. Omitted / Re-teach / Revise
- ☐ Recognising GPS failures/error messages and correct subsequent actions. Omitted / Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes based on the student's analysis of their performance:

Date: Instructor: Student:

LESSON 36 – EXERCISE 18B DUAL NAVIGATION 7 DURATION 1.00

Aim: To learn to navigate under VFR in low visibility VMC (Degraded Visual Environment (DVE)).

Threat Error Management:

Threat	Consequence	Mitigation
High ground/obstructions	Collision	Minimum safe altitude
Loss of control	Stall/Spin/Spiral Dive	Cross reference instruments/slow safe cruise/rate 1 turns

PRE FLIGHT:

- Pre-flight brief: Area surface elevations & obstructions and airspace
- Weather and NOTAM brief
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Instructor demonstration: gyro acceleration errors (during T.O roll)
- Revision of integrated scan taught in lesson 26.
- Rate 1 turns
- Compass turns
- Recovery from spiral dive (inc instrument indications)
- Safe slow flight (stall x 1.3) inc. flap
- Descending to 500ft AGL: effects of gradient wind on drift.
- 360° turns at low level – effects of drift (tendency to over-control/speed monitoring & management)
- Situation awareness; map reading
- Radio aids & communication limitations at low level.

- **Recovery to base student to practise:** Items as seen appropriate from the overview including a low level circuit join and a poor weather circuit to landing.

POST FLIGHT & DEBRIEF:

As previous

EASA Ref: AMC FCL.210.A

This lesson builds on the techniques taught in Lesson 26. However, the main emphasis should be to avoid such flight conditions. The knowledge and skills gained should enable the maintenance of controlled flight when marginal weather is inadvertently encountered, whilst achieving a diversion to land or recovery to good VMC conditions.

The student demonstrates a clear understanding of the principles:

☐ Spatial Orientation	Omitted / Re-teach / Revise
☐ Gradient wind effects	Omitted / Re-teach / Revise
☐ Obstruction profiles	Omitted / Re-teach / Revise
☐ Situation awareness	Omitted / Re-teach / Revise
☐ Minimum safe Altitude	Omitted / Re-teach / Revise

The student demonstrates the correct use of the techniques:

☐ Radio Aids limitations	Omitted / Re-teach / Revise
☐ Integrated visual/instrument scan	Omitted / Re-teach / Revise
☐ Safe slow flight	Omitted / Re-teach / Revise
☐ Rate 1 turns (Basic)	Omitted / Re-teach / Revise
☐ Compass turns	Omitted / Re-teach / Revise

Comment on all items annotated “X” above

General remarks and notes:

LESSON 37 – INTRODUCTION TO EASA PPL(A) SKILL TEST DURATION 2.00

Aim: To experience the content and conduct of the EASA PPL(A) Skill Test (Single Engined Piston) and revise to the required PPL(A) Skill Test standards.

Threat Error Management:
Revision and practise all elements of the threats and errors detailed throughout the course.

Section 1 Pre-Flight Ops & departure	Section 2 General Airwork	Section 3 Enroute Procedures
○ Pre-flight documentation, NOTAM & weather briefing ○ Mass, balance and performance ○ Aeroplane inspection & servicing ○ Engine start/post start procedures ○ Aerodrome, taxiing & pre-take-off procedures ○ Take-off/ after take-off procedures ○ Aerodrome departure procedures ○ ATC liaison/compliance, R/T	○ ATC liaison, compliance & R/T procedures ○ S & L flight with speed changes ○ Climbing; best rate, turns & levelling off ○ 30° bank turns; lookout & collision avoidance ○ 45° bank turns; recognition & recovery from a spiral dive. ○ Flight at critically low airspeed; with & without flaps. ○ Stalling; clean & recovery with power. ○ Approach to stall in the approach configuration descending turning at 20° bank. ○ Approach to stall in the landing configuration ○ Descending; with & without power ○ Steep gliding turns ○ Levelling off.	○ Flight Plan, dead reckoning and map reading ○ Maintenance; altitude, heading & speed ○ Orientation, airspace structure, timing, revision of ETAs & log keeping ○ Diversion to alternate aerodrome; planning/implementation ○ Use of Radio aids and GNSS ○ Basic instrument flying to include 180° level turn ○ Flight management; checks/fuel systems & carburettor Icing etc. ○ ATC compliance & R/T procedures
Section 4 Approach & Land Procedures	**Section 5 Abnormal & Emergency**	**Section 6 Relevant Class or Type Items**
○ Aerodrome arrival Procedures Landings; ○ Precision ○ Crosswind ○ Flapless ○ Glide ○ Go around from low height ○ ATC compliance & RT procedures ○ Actions after flight.	○ EFATO including fire drill ○ Forced landing (simulated) ○ Precautionary Landing (simulated) ○ Simulated emergencies ○ Oral questions	Oral questions; ○ Relevant items of the class or the type; aeroplane systems: autopilot, pressurisation, de-icing/anti-icing etc. ○ Fuel type, oil, tyre pressures, undercarriage etc

General remarks and notes:

Date: Instructor: Student:

LESSON 38 – SOLO NAVIGATION AND GH REVISION

DURATION 1.15

Aim: To revise basic visual navigation techniques and GH solo.

Threat Error Management:

Threat	Consequence	Mitigation
Other aircraft	Collision	Maintain Effective Lookout!

PRE FLIGHT:

- Student to plan a single leg to a suitable point. Route to be decided by the student. The second leg should be practice of an airborne planned diversion from the end of leg 1 to an area suitable for GH practice (total time on Navigation exercises at least 30 minutes). Student to self-brief weather and NOTAMs.
- Completion by Instructor & Student of the Solo Navigation Briefing Certificate.
- **Student to practise:** Items as seen appropriate from the overview

AIREX:

- Student completes the first leg navigation and subsequent diversion practice into GH practice area.
- GH practice as authorised by instructor (steep turns/stalling)
- **Recovery to base student to practise:** Items solo as authorised by instructor (various circuits).

POST FLIGHT & DEBRIEF:

Instructor to ensure that the post-flight documentation is correctly completed by the student and that the student is debriefed. The student should be asked to analyse their performance. Any difficulties, problems or questions should be addressed by the instructor.

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As a solo exercise, this gives the student the opportunity to practice and demonstrate their ability to act as commander. Instructors should offer support, but ultimately must supervise closely the planning process, particularly weather, before authorising the flight. Completion of the Briefing Certificate will assist with ensuring adequate supervision.

NB – Mark as satisfactory √ or X as applicable.
If 'X' annotate 'Omitted/Re-teach/Revise' – delete as applicable

The student demonstrates the correct use of the requisite techniques of

- ☐ Obtaining weather information and extracting data relevant to nav planning Re-teach / Revise
- ☐ Obtaining and interpreting NOTAMS Re-teach / Revise
- ☐ Map preparation Re-teach / Revise
- ☐ Navigation planning calculations and preparing a plog Re-teach / Revise
- ☐ Calculating Landing & Take-off performance using Flight Manual/POH Re-teach / Revise

Comment on all items annotated "X" above

General remarks and notes based on the student's analysis of their performance:

Date: Instructor: Student: