**Subpart J - FI / Flight Instructors**

***AMC 1.* FCL. 930. FI FI — Training Course**

*FI ( A ), FI ( H ) and FI ( As ) TRAINING COURSE GENERAL*

a ) The aim of the FI training course is to train aircraft licence holders to the level of competence defined in FCL.920 ;

b ) The Training Course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the FI task including at least the following :

1 ) refresh the technical knowledge of the student - instructor ;

2 ) train the student - instructor to teach the ground subjects and air exercises ;

3 ) ensure that the student - instructor’s flying is of a sufficiently high standard ;

4 ) teach the student - instructor the principles of basic instruction and to apply them at the

PPL level.

***FLIGHT INSTRUCTION***

c ) The remaining ***5*** *hours* in FCL.930. FI ( b )( 3 ) may be mutual flying *( that is, two applicants flying together to practice flight demonstrations )* ;

d ) The Skill Test is additional to the Course Training time.

***CONTENT***

e ) The Training Course consists of ***2***  *( two ) parts* :

1 ) *Part* ***1****,* *Theoretical Knowledge*, including the teaching and learning instruction that should

comply with AMC 1. FCL. 920 ;

2 ) *Part* ***2****,* *Flight Instruction*.

**Part 1. *TEACHING and LEARNING***

a ) The Course should include *at least* ***125***  *hours of theoretical knowledge* instruction, including *at least* ***25*** *hours* teaching and learning instruction.

CONTENT of the TEACHING and LEARNING INSTRUCTIONS

*( INSTRUCTIONAL TECHNIQUES )* :

b ) *The Learning process :*

1 ) motivation ;

2 ) perception and understanding ;

3 ) memory and its application ;

4 ) habits and transfer ;

5 ) obstacles to learning ;

6 ) incentives to learning ;

7 ) learning methods ;

8 ) rates of learning.

c ) *The Teaching process :*

1 ) elements of effective teaching ;

2 ) planning of instructional activity ;

3 ) teaching methods ;

4 ) teaching from the “ known “ to the “ unknown “ ;

5 ) use of “ lesson plans “.

d ) *Training Philosophies :*

1 ) value of a structured *( approved )* course of training ;

2 ) importance of a planned syllabus ;

3 ) integration of theoretical knowledge and flight instruction ;

e ) *Techniques of Applied instruction :*

1 ) Theoretical Knowledge : Classroom instruction techniques :

*( i ) use of training aids ;*

*( ii ) group lectures ;*

*( iii ) individual briefings ;*

*( iv ) student participation or discussion.*

2 ) Flight : Airborne instruction techniques :

*( i ) the flight or cockpit environment ;*

*( ii ) techniques of applied instruction ;*

*( iii ) post - flight and in - flight judgement and decision making.*

f ) *Student Evaluation and Testing :*

1 ) assessment of student performance :

*( i ) the function of progress tests ;*

*( ii ) recall of knowledge ;*

*( iii ) translation of knowledge into understanding ;*

*( iv ) development of understanding into actions ;*

*( v ) the need to evaluate rate of progress.*

2 ) analysis of student errors :

*( i ) establish the reason for errors ;*

*( ii ) tackle major faults first, minor faults second ;*

*( iii ) avoidance of over criticism ;*

*( iv ) the need for clear concise communication.*

g ) *Training Programme Development :*

1 ) lesson planning ;

2 ) preparation ;

3 ) explanation and demonstration ;

4 ) student participation and practice ;

5 ) evaluation.

h ) *Human Performance and Limitations Relevant to Flight Instruction :*

1 ) physiological factors :

( i ) psychological factors ;

( ii ) human information processing ;

( iii ) behavioural attitudes ;

( iv ) development of judgement and decision making.

2 ) threat and error management.

i ) *Specific Hazards involved in simulating systems failures and malfunctions in the aircraft during flight :*

*( i ) importance of “ touch drills “ ;*

*( ii ) situational awareness ;*

*( iii ) adherence to correct procedures.*

j ) *Training Administration :*

1 ) flight or theoretical knowledge instruction records ;

2 ) pilot’s personal flying logbook ;

3 ) the flight or ground curriculum ;

4 ) study material ;

5 ) official forms ;

6 ) Flight Manual or equivalent document *( for example owner’s manual or pilot’s operating*

*handbook )* ;

7 ) flight authorization papers ;

8 ) aircraft documents ;

9 ) the private pilot’s licence regulations.

**A. AEROPLANES**

**Part 2. *AIR EXERCISES***

a ) The air exercises are similar to those used for the training of PPL ( A ) but with additional items designed to cover the needs of an FI ;

b ) 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 :

1 ) the applicant’s progress and ability ;

2 ) the weather conditions affecting the flight ;

3 ) the flight time available ;

4 ) instructional technique considerations ;

5 ) the local operating environment.

c ) It follows that student - instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

*GENERAL*

d ) The briefing normally includes a statement of the aim and a brief allusion to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practiced by the student during the flight. It should include information on how the flight will be conducted, who is to fly the aeroplane and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught ;

e ) The four basic components of the briefing will be :

1 ) the aim ;

2 ) principles of flight *( briefest reference only ) ;*

3 ) the air exercise(s) *( what, and how and by whom) ;*

4 ) airmanship *( weather, flight safety etc... ).*

*PLANNING OF FLIGHT LESSONS*

f ) The preparation of lesson plans is an essential prerequisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

*GENERAL CONSIDERATIONS*

g ) The student - instructor should complete flight training to practice the principles of basic instruction at the PPL ( A ) level ;

h ) During this training, except when acting as a student pilot for mutual flights, the student- instructor occupies the seat normally occupied by the FI( A ) ;

i ) It is to be noted that airmanship and look-out is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at all times ;

j ) If the privileges of the FI ( A ) Certificate are to include instruction for night flying, exercises 19 and 20 of the flight instruction syllabus should be undertaken at night in addition to by day either as part of the course or subsequent to certification issue ;

k ) The student - instructor should learn how to identify common errors and how to correct them properly, which should be emphasized at all times.

*SYLLABUS of FLIGHT INSTRUCTION CONTENTS*

**LONG BRIEFINGS and AIR EXERCISES**

***Note :*** *though exercise 11 b is not required for the PPL ( A ) course, it is a requirement for the FI course.*

**EXERCISE 1 : *FAMILIARISATION with the AEROPLANE***

***a )*** *Long Briefing Objectives :*

1 ) introduction to the aeroplane ;

2 ) explanation of the cockpit layout ;

3 ) aeroplane and engine systems ;

4 ) checklists, drills and controls ;

5 ) propeller safety ;

*( i ) precautions general ;*

*( ii ) precautions before and during hand turning ;*

*( iii ) hand swinging technique for starting ( if applicable to type ).*

6 ) differences when occupying the instructor’s seat ;

7 ) emergency drills :

*( i ) action if fire in the air and on the ground : engine, cock or cabin and electrical fire ;*

*( ii ) system failure as applicable to type ;*

*( iii ) escape drills : location and use of emergency equipment and exits.*

***b )*** *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 2 : *PREPARATION for and ACTION AFTER FLIGHT***

***a )*** *Long Briefing objectives :*

1 ) flight authorization and aeroplane acceptance, including technical log *( if applicable )* and certificate of maintenance ;

2 ) equipment required for flight *( maps, etc.. )* ;

3 ) external checks ;

4 ) internal checks ;

5 ) student comfort, harness, seat or rudder pedal adjustment ;

6 ) starting and warming up checks ;

7 ) power checks ;

8 ) running down, system checks and switching off the engine ;

9 ) leaving the aeroplane, parking, security and picketing ;

10 ) completion of authorization sheet and aeroplane serviceability documents.

***b )*** *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 3 : *AIR EXPERIENCE***

***a )*** *Long Briefing objectives :*

Note : there is no requirement for a long briefing for this exercise.

***b )*** *Air exercise :*

1 ) air experience ;

2 ) cockpit layout, ergonomics and controls ;

3 ) cockpit procedures : stability and control.

**EXERCISE 4 : *EFFECTS of CONTROLS***

***a )*** *Long Briefing objectives :*

1 ) function of primary flying controls : when laterally level and banked ;

2 ) further effect of ailerons and rudder ;

3 ) effect of inertia ;

4 ) effect of air speed ;

5 ) effect of slipstream ;

6 ) effect of power ;

7 ) effect of trimming controls ;

8 ) effect of flaps ;

9 ) operation of mixture control ;

10 ) operation of carburettor heat control ;

11 ) operation of cabin heat or ventilation systems ;

***b )*** *Air Exercise :*

1 ) primary effects of flying controls : when laterally level and banked ;

2 ) further effects of ailerons and rudder ;

3 ) effect of air speed ;

4 ) effect of slipstream ;

5 ) effect of power ;

6 ) effect of trimming controls ;

7 ) effect of flaps ;

8 ) operation of mixture control ;

9 ) operation of carburettor heat control ;

10 ) operation of cabin heat or ventilation systems ;

11 ) effect of other controls as applicable.

**EXERCISE 5 : *TAXIING***

***a )*** *Long Briefing objectives :*

1 ) pre - taxiing checks ;

2 ) starting, control of speed and stopping ;

3 ) engine handling ;

4 ) control of direction and turning *( including manoeuvring in confined spaces ) ;*

5 ) parking area procedures and precautions ;

6 ) effect of wind and use of flying controls ;

7 ) effect of ground surface ;

8 ) freedom of Rudder movement ;

9 ) marshalling signals ;

10 ) instrument checks ;

11 ) ATC procedures ;

12 ) emergencies : steering failure and brake failure.

***b )*** *Air Exercise :*

1 ) pre - taxiing checks ;

2 ) starting, control of speed and stopping ;

3 ) engine handling ;

4 ) control of direction and turning ;

5 ) turning in confined spaces ;

6 ) parking area procedures and precautions ;

7 ) effect of wind and use of flying control ;

8 ) effect of ground surface ;

9 ) freedom of Rudder movement ;

10 ) marshalling signals ;

11 ) instrument checks ;

12 ) ATC procedures ;

13 ) emergencies : steering failure and brake failure.

**EXERCISE 6 : *STRAIGHT and LEVEL FLIGHT***

***a )*** *Long Briefing objectives :*

1 ) the forces ;

2 ) longitudinal stability and control in pitch ;

3 ) relationship of CG to control in pitch ;

4 ) lateral and directional stability *( control of lateral level and balance ) ;*

5 ) attitude and balance control ;

6 ) trimming ;

7 ) power settings and air speeds ;

8 ) drag and power curves ;

9 ) range and endurance.

***b )*** *Air Exercise :*

1 ) at normal cruising power ;

2 ) attaining and maintaining straight and level flight ;

3 ) demonstration of inherent stability ;

4 ) control in pitch, including use of elevator trim control ;

5 ) lateral level, direction and balance, use of rudder trim controls as applicable at selected air speeds *( use of power )* :

*( i ) effect of drag and use of power ( two air speeds for one power setting ) ;*

*( ii ) straight and level in different aeroplane configurations ( flaps and landing gear ) ;*

*( iii ) use of instruments to achieve precision flight.*

**EXERCISE 7 : *CLIMBING***

***a )*** *Long Briefing objectives :*

1 ) the forces ;

2 ) relationship between power or air speed and rate of climb ( power curves maximum rate of climb ( V**y** ) ) ;

3 ) effect of mass ;

4 ) effect of flaps ;

5 ) engine considerations ;

6 ) effect of density altitude ;

7 ) the cruise climb ;

8 ) maximum angle of climb ( V**x** ).

***b )*** *Air Exercise :*

1 ) entry and maintaining the normal maximum rate climb ;

2 ) leveling off ;

3 ) leveling off at selected altitudes ;

4 ) climbing with flaps down ;

5 ) recovery to normal climb ;

6 ) en - route climb *( cruise climb )* ;

7 ) maximum angle of climb ;

8 ) use of instruments to achieve precision flight.

**EXERCISE 8 : *DESCENDING***

a ) Long Briefing objectives :

1 ) the forces ;

2 ) glide descent : angle, air speed and rate of descent ;

3 ) effect of flaps ;

4 ) effect of wind ;

5 ) effect of mass ;

6 ) engine considerations ;

7 ) power assisted descent : power or air speed and rate of descent ;

8 ) cruise descent ;

9 ) sideslip.

***b )*** *Air Exercise :*

1 ) entry and maintaining the glide ;

2 ) leveling off ;

3 ) leveling off at selected altitudes ;

4 ) descending with flaps down ;

5 ) powered descent : cruise descent *( including effect of power and air speed )* ;

6 ) side - slipping *( on suitable types )* ;

7 ) use of instrument to achieve precision flight.

**EXERCISE 9 : *TURNING***

***a )*** *Long Briefing objectives :*

1 ) the forces ;

2 ) use of controls ;

3 ) use of power ;

4 ) maintenance of attitude and balance ;

5 ) medium level turns ;

6 ) climbing and descending turns ;

7 ) slipping turns ;

8 ) turning onto selected headings : use of gyro heading indicator and magnetic compass.

***b )*** *Air Exercise :*

1 ) entry and maintaining medium level turns ;

2 ) resuming straight flight ;

3 ) faults in the turn *( incorrect pitch, bank and balance )* ;

4 ) climbing turns ;

5 ) descending turns ;

6 ) slipping turns *( on suitable types )* ;

7 ) turns to selected headings : use of gyro heading indicator and magnetic compass ;

8 ) use of instruments to achieve precision flight ;

***Note :*** *stall or spin awareness and avoidance training consists of exercises 10 a, 10 b and 11 a.*

**EXERCISE 10 a : *SLOW FLIGHT***

***a )*** *Long Briefing objectives :*

1 ) aeroplane handling characteristics during slow flight at :

( i ) V **s1** & V **so** + 10 knots ;

( ii ) V **s1** & V **so** + 5 knots.

2 ) slow flight during instructor induced distractions ;

3 ) effect of overshooting in configurations where application of engine power causes a strong “ nose - up “ trim change.

***b )*** *Air Exercise :*

1 ) safety checks ;

2 ) introduction to slow flight ;

3 ) controlled slow flight in the clean configuration at :

( i ) V **s1** + 10 knots and with flaps down ;

( ii ) V **so** + 10 knots ;

( iii ) straight and level flight ;

( iv ) level turns ;

( v ) climbing and descending ;

( vi ) climbing and descending turns.

4 ) controlled slow flight in the clean configuration at :

( i ) V **s1** + 5 knots and with flaps down ;

( ii ) V **so** + 5 knots ;

( iii ) straight and level flight ;

( iv ) level turns ;

( v ) climbing and descending ;

( vi ) climbing and descending turns ;

( vii ) descending “ unbalanced “ turns at low air speed : the need to maintain balanced flight.

5 ) “ instructor induced distractions “ during flight at low air speed : the need to maintain balanced flight and a safe air speed ;

6 ) effect of going around in configurations where application of engine power causes a strong “ nose - up “ trim change.

**EXERCISE 10 b : *STALLING***

***a )*** *Long Briefing objectives :*

1 ) characteristics of the stall ;

2 ) angle of attack ;

3 ) effectiveness of the controls at the stall ;

4 ) factors affecting the stalling speed :

*( i ) effect of flaps, slats and slots ;*

*( ii ) effect of power, mass, CG and load factor.*

5 ) effects of unbalance at the stall ;

6 ) symptoms of the stall ;

7 ) stall recognition and recovery ;

8 ) stalling and recovery :

*( i ) without power ;*

*( ii ) with power on ;*

*( iii ) with flaps down ;*

*( iv ) maximum power climb ( straight and turning flight to the point of stall with uncompensated yaw ) ;*

*( v ) stalling and recovery during manoeuvres involving more than* ***1 G*** *( accelerated stalls, including secondary stalls and recoveries ) ;*

*( vi ) recovering from incipient stalls in the landing and other configurations and conditions ;*

*( vii ) recovering at the incipient stage during change of configuration ;*

*( viii ) stalling and recovery at the incipient stage with “ instructor induced “ distractions.*

***Note :*** *consideration is to be given to manoeuvre limitations and references to the Flight Manual or equivalent document ( for example owner’s manual or pilot’s operating handbook ) in relation to mass and balance limitations. The safety checks should take into account the minimum safe altitude for initiating such exercises in order to ensure an adequate margin of safety for the recovery. If specific procedures for stalling or spinning exercises and for the recovery techniques are provided by the Flight Manual or equivalent document ( for example owner’s manual or pilot’s operating handbook ), they have to be taken into consideration. These factors are also covered in the next exercise spinning.*

***b )*** *Air Exercise :*

1 ) safety checks ;

2 ) symptoms of the stall ;

3 ) stall recognition and recovery :

( i ) without power ;

( ii ) with power on ;

( iii ) recovery when a wing drops at the stall ;

( iv ) stalling with power “ on “ and recovery ;

( v ) stalling with flap “ down “ and recovery ;

( vi ) maximum power climb ( straight and turning flight ) to the point of stall with uncompensated yaw : effect of unbalance at the stall when climbing power is being used ;

( vii ) stalling and recovery during manoeuvres involving more than **1 G** ( accelerated stalls, including secondary stalls and recoveries ) ;

( viii ) recoveries from incipient stalls in the landing and other configurations and conditions ;

( ix ) recoveries at the incipient stage during change of configuration ;

( x ) instructor induced distractions during stalling.

***Note :*** *consideration of manoeuvre limitations and the need to refer to the Aeroplane Manual and weight ( mass ) and balance calculations. The safety checks should take into account the minimum safe altitude for initiating such exercises in order to ensure an adequate margin of safety for the recovery. If specific procedures for stalling or spinning exercises and for the recovery techniques are provided by the Flight Manual or equivalent document ( for example owner’s manual or pilot’s operating handbook ), they have to be taken into consideration. These factors are to be covered in the next exercise : spinning.*

**EXERCISE 11 a : *SPIN RECOVERY at the INCIPIENT STAGE***

***a )*** *Long Briefing objectives :*

1 ) causes, stages, autorotation and characteristics of the spin ;

2 ) recognition and recovery at the incipient stage : entered from various flight attitudes ;

3 ) aeroplane limitations.

***b )*** *Air Exercise :*

1 ) aeroplane limitations ;

2 ) safety checks ;

3 ) recognition at the incipient stage of a spin ;

4 ) recoveries from incipient spins entered from various attitudes with the aeroplane in the clean configuration, including instructor induced distractions.

**EXERCISE 11 b : *SPIN RECOVERY at the DEVELOPED STAGE***

***a )*** *Long Briefing objectives :*

1 ) spin entry ;

2 ) recognition and identification of spin direction ;

3 ) spin recovery ;

4 ) use of controls ;

5 ) effects of power or flaps *( flap restriction applicable to type )* ;

6 ) effect of the CG upon spinning characteristics ;

7 ) spinning from various flight attitudes ;

8 ) aeroplane limitation ;

9 ) safety checks.

***b )***  *Air Exercise :*

1 ) aeroplane limitations ;

2 ) safety checks ;

3 ) spin entry ;

4 ) recognition and identification of the spin direction ;

5 ) spin recovery *( reference to flight manual )* ;

6 ) use of controls ;

7 ) effects of power or flaps *( restrictions applicable to aeroplane type )* ;

8 ) spinning and recovery from various flight attitudes.

**EXERCISE 12 : *TAKE - OFF and CLIMB to DOWNWIND POSITION***

***a )*** *Long Briefing objectives :*

1 ) handling : factors affecting the length of take-off run and initial climb ;

2 ) correct lift off speed, use of elevators *( safeguarding the nose wheel ),* rudder and power ;

3 ) effect of wind *( including crosswind component )* ;

4 ) effect of flaps *( including the decision to use and the amount permitted )* ;

5 ) effect of ground surface and gradient upon the take-off run ;

6 ) effect of mass, altitude and temperature on take-off and climb performance ;

7 ) pre take-off checks ;

8 ) ATC procedure before take-off ;

9 ) drills, during and after take-off ;

10 ) noise abatement procedures ;

11 ) tail wheel considerations ( as applicable ) ;

12 ) short or soft field take-off considerations or procedures ;

13 ) emergencies :

*( i ) aborted take-off ;*

*( ii ) engine failure after take-off ;*

14 ) ATC procedures.

***b )*** *Air Exercise :*

1 ) take-off and climb to downwind position ;

2 ) pre take-off checks ;

3 ) into wind take-off ;

4 ) safeguarding the nose wheel ;

5 ) crosswind take-off ;

6 ) drills during and after take-off ;

7 ) short take-off and soft field procedure or techniques *( including performance calculations )* ;

8 ) noise abatement procedures.

**EXERCISE 13 : *CIRCUIT, APPROACH and LANDING***

a ) Long Briefing objectives :

1 ) downwind leg, base leg and approach : position and drills ;

2 ) factors affecting the final approach and the landing run ;

3 ) effect of mass ;

4 ) effects of altitude and temperature ;

5 ) effect of wind ;

6 ) effect of flap ;

7 ) landing ;

8 ) effect of ground surface and gradient upon the landing run ;

9 ) types of approach and landing :

*( i ) powered ;*

*( ii ) crosswind ;*

*( iii ) flapless ( at an appropriate stage of the course ) ;*

*( iv ) glide ;*

*( v ) short field ;*

*( vi ) soft field.*

10 ) tail wheel aeroplane considerations *( as applicable )* ;

11 ) missed approach ;

12 ) engine handling ;

13 ) wake turbulence awareness ;

14 ) windshear awareness ;

15 ) ATC procedures ;

16 ) mislanding and go-around ;

17 ) special emphasis on look - out.

***b )*** *Air Exercise :*

1 ) circuit approach and landing ;

2 ) circuit procedures : downwind and base leg ;

3 ) powered approach and landing ;

4 ) safeguarding the nose wheel ;

5 ) effect of wind on approach and touchdown speeds and use of flaps ;

6 ) crosswind approach and landing ;

7 ) glide approach and landing ;

8 ) flapless approach and landing *( short and soft field )* ;

9 ) short field and soft field procedures ;

10 ) wheel landing *( tail wheel aircraft )* ;

11 ) missed approach and Go - around ;

12 ) mislanding and Go - around ;

13 ) noise abatement procedures.

**EXERCISE 14 : *FIRST SOLO and CONSOLIDATION***

***Note :*** *a summary of points to be covered before sending the student on first solo.*

***a )*** *Long Briefing objectives :*

During the flights immediately following the solo circuit consolidation period the following should be covered :

1 ) procedures for leaving and rejoining the circuit ;

2 ) local area *( restrictions, controlled airspace, etc... )* ;

3 ) compass turns ;

4 ) QDM meaning and use.

***b )*** *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 15 : *ADVANCED TURNING***

***a )*** *Long Briefing objectives :*

1 ) the forces ;

2 ) use of power ;

3 ) effect of load factor :

*( i ) structural considerations ;*

*( ii ) increased stalling speed.*

4 ) physiological effects ;

5 ) rate and radius of turn ;

6 ) steep, level, descending and climbing turns ;

7 ) stalling in the turn and how to avoid it ;

8 ) spinning from the turn : recovery at the incipient stage ;

9 ) spiral dive ;

10 ) unusual attitudes and recoveries.

***Note :*** *considerations are to be given to manoeuvre limitations and reference to the Flight Manual or equivalent document ( for example owner’s manual or pilot’s operating handbook ) in relation to mass and balance, and any other restrictions for practice entries to the spin.*

***b )*** *Air Exercise :*

1 ) level, descending and climbing steep turns ;

2 ) stalling in the turn ;

3 ) spiral dive ;

4 ) spinning from the turn ;

5 ) recovery from unusual attitudes ;

6 ) maximum rate turns.

**EXERCISE 16 : *FORCED LANDING without POWER***

***a )*** *Long Briefing objectives :*

1 ) selection of forced landing areas ;

2 ) provision for change of plan ;

3 ) gliding distance : consideration ;

4 ) planning the descent ;

5 ) key positions ;

6 ) engine failure checks ;

7 ) use of radio : R / T “ distress “ procedure ;

8 ) base leg ;

9 ) final approach ;

10 ) go - around ;

11 ) landing considerations ;

12 ) actions after landing : aeroplane security ;

13 ) causes of engine failure.

***b )*** *Air Exercise :*

1 ) forced landing procedures ;

2 ) selection of landing area :

*( i ) provision for change of plan ;*

*( ii ) gliding distance considerations.*

3 ) planning the descent ;

4 ) key positions ;

5 ) engine failure checks ;

6 ) engine cooling precautions ;

7 ) use of radio ;

8 ) base leg ;

9 ) final approach ;

10 ) landing ;

11 ) actions after landing : when the exercise is conducted at an aerodrome ;

12 ) aeroplane security.

**EXERCISE 17 : *PRECAUTIONARY LANDING***

***a )*** *Long Briefing objectives :*

1 ) occasions when necessary *( in - flight conditions )* ;

2 ) landing area selection and communication *( R / T procedure )* ;

3 ) overhead inspection ;

4 ) simulated approach ;

5 ) climb away ;

6 ) landing area selection :

*( i ) normal aerodrome ;*

*( ii ) disused aerodrome ;*

*( iii ) ordinary field ;*

7 ) circuit and approach ;

8 ) actions after landing : aeroplane security.

***b )*** *Air Exercise :*

1 ) occasions when necessary *( in - flight conditions )* :

2 ) landing area selection ;

3 ) overhead inspection ;

4 ) simulated approach ;

5 ) climb away ;

6 ) landing area selection :

*( i ) normal aerodrome ;*

*( ii ) disused aerodrome ;*

( iii ) ordinary field ;

7 ) circuit and approach ;

8 ) actions after landing : aeroplane security.

**EXERCISE 18 a : *NAVIGATION***

***a )*** *Long Briefing objectives :*

1 ) flight planning ;

( i ) weather forecast and actual(s) ;

( ii ) map selection, orientation, preparation and use :

(A) choice of route ;

(B) regulated or controlled airspace ;

(C) danger, prohibited and restricted areas ;

(D) safety altitude.

( iii ) calculations :

(A) magnetic heading(s) and time(s) en-route ;

(B) fuel consumption ;

(C) mass and balance ;

(D) mass and performance.

( iv ) flight information :

(A) NOTAMs etc.. ;

(B) noting of required radio frequencies ;

(C) selection of alternate aerodrome(s).

( v ) aeroplane documentation ;

( vi ) notification of the flight :

(A) pre-flight administration procedures ;

(B) flight plan form *( where appropriate ).*

2 ) departure ;

( i ) organization of cockpit workload ;

( ii ) departure procedures :

(A) altimeter settings ;

(B) setting heading procedures ;

(C) noting of ETA(s).

( iii ) en-route map reading : identification of ground features ;

( iv ) maintenance of altitudes and headings ;

( v ) revisions to ETA and heading, wind effect, drift angle and groundspeed checks ;

( vi ) log keeping ;

( vii ) use of radio *( including VDF, if applicable ) ;*

( viii ) minimum weather conditions for continuance of flight ;

( ix ) “ in - flight “ decisions ;

( x ) diversion procedures ;

( xi ) operations in regulated or controlled airspace ;

( xii ) procedures for entry, transit and departure ;

( xiii ) navigation at minimum level ;

( xiv ) uncertainty of position procedure, including R / T procedure ;

( xv ) lost procedure ;

( xvi ) use of radio Navaids.

3 ) arrival procedures and aerodrome circuit joining procedures :

( i ) ATC liaison, R / T procedure, etc... ;

( ii ) altimeter setting ;

( iii ) entering the traffic pattern *( controlled or uncontrolled aerodromes )* ;

( iv ) circuit procedures ;

( v ) parking procedures ;

( vi ) security of aircraft ;

( vii ) refueling ;

( viii ) booking in.

***b )*** *Air Exercise :*

1 ) flight planning :

( i ) weather forecast and actual(s) ;

( ii ) map selection and preparation :

(A) choice of route ;

(B) regulated or controlled airspace ;

(C) danger, prohibited and restricted areas ;

(D) safety altitude.

( iii ) calculations :

(A) magnetic heading(s) and time(s) en - route ;

(B) fuel consumption ;

(C) mass and balance ;

(D) mass and performance ;

( iv ) flight information :

(A) NOTAMs etc... ;

(B) noting of required radio frequencies ;

(C) selection of alternate aerodromes.

( v ) aircraft documentation ;

( vi ) notification of the flight :

(A) flight clearance procedures *( as applicable ) ;*

(B) flight plans.

2 ) aerodrome departure ;

( i ) organization of cockpit workload ;

( ii ) departure procedures :

(A) altimeter settings ;

(B) en-route:

(C) noting of ETA(s).

( iii ) wind effect, drift angle and ground speed checks ;

( iv ) maintenance of altitudes and headings ;

( v ) revisions to ETA and heading ;

( vi ) log keeping ;

( vii ) use of radio *( including VDF, if applicable )* ;

( viii ) minimum weather conditions for continuance of flight ;

( ix ) “ in - flight “ decisions ;

( x ) diversion procedure ;

( xi ) operations in regulated or controlled airspace ;

( xii ) procedures for entry, transit and departure ;

( xiii ) uncertainty of position procedure ;

( xiv ) lost procedure ;

( xv ) use of radio Navaids.

3 ) arrival procedures and aerodrome joining procedures :

( i ) ATC liaison, R / T procedure etc... ;

( ii ) altimeter setting ;

( iii ) entering the traffic pattern ;

( iv ) circuit procedures ;

( v ) parking procedures ;

( vi ) security of aircraft ;

( vii ) refueling ;

( viii ) booking in.

**EXERCISE 18 b : *NAVIGATION at lower LEVELS and in reduced VISIBILITY***

***a )*** *Long Briefing objectives :*

1 ) general considerations :

( i ) planning requirements before flight in entry or exit lanes ;

( ii ) ATC rules, pilot qualifications and aircraft equipment ;

( iii ) entry or exit lanes and areas where specific local rules apply.

2 ) low level familiarization :

( i ) actions before descending ;

( ii ) visual impressions and height keeping at low altitude ;

( iii ) effects of speed and inertia during turns ;

( iv ) effects of wind and turbulence ;

3 ) low level operation :

( i ) weather considerations ;

( ii ) low cloud and good visibility ;

( iii ) low cloud and poor visibility ;

( iv ) avoidance of moderate to heavy rain showers ;

( v ) effects of precipitation ;

( vi ) joining a circuit ;

( vii ) bad weather circuit, approach and landing.

***b )*** *Air Exercise :*

1 ) general considerations : entry or exit lanes and areas where specific local rules apply ;

2 ) low level familiarization :

( i ) actions before descending ;

( ii ) visual impressions and height keeping at low altitude ;

( iii ) effects of speed and inertia during turns ;

( iv ) effects of wind and turbulence ;

( v ) hazards of operating at low levels ;

3 ) low level operation :

( i ) weather considerations ;

( ii ) low cloud and good visibility ;

( iii ) low cloud and poor visibility ;

( iv ) avoidance of moderate to heavy rain showers ;

( v ) effects of precipitation *( forward visibility )* ;

( vi ) joining a circuit ;

( vii ) bad weather circuit, approach and landing.

**EXERCISE 18 c : *USE of RADIO NAVIGATION AIDS under VFR***

a ) Long Briefing objectives :

1 ) use of VOR :

( i ) availability, AIP and frequencies ;

( ii ) signal reception range ;

( iii ) selection and identification ;

( iv ) radials and method of numbering ;

( v ) use of OBS ;

( vi ) to or from indication and station passage ;

( vii ) selection, interception and maintaining a radial ;

( viii ) use of two stations to determine position.

2 ) use of ADF equipment :

( i ) availability of NDB stations, AIP and frequencies ;

( ii ) signal reception range ;

( iii ) selection and identification ;

( iv ) orientation in relation to NDP ;

( v ) homing to an NDP.

3 ) use of VHF / DF :

( i ) availability, AIP and frequencies ;

( ii ) R / T procedures ;

( iii ) obtaining QDMs and QTEs.

4 ) use of radar facilities :

( i ) availability and provision of service and AIS ;

( ii ) types of service ;

( iii ) R / T procedures and use of transponder :

(A) mode selection ;

(B) emergency codes.

5 ) use of distance DME :

( i ) availability and AIP ;

( ii ) operating modes ;

( iii ) slant range.

6 ) use of GNSS ( RNAV – SATNAV ) :

( i ) availability ;

( ii ) operating modes ;

( iii ) limitations.

***b )*** *Air Exercise :*

1 ) use of VOR :

( i ) availability, AIP and frequencies ;

( ii ) selection and identification ;

( iii ) use of OBS ;

( iv ) to or from indications : orientation ;

( v ) use of CDI ;

( vi ) determination of radial ;

( vii ) intercepting and maintaining a radial ;

( viii ) VOR passage ;

( ix ) obtaining a fix from two VORs.

2 ) use of ADF equipment ;

( i ) availability of NDB stations, AIP and frequencies ;

( ii ) selection and identification ;

( iii ) orientation relative to the beacon ;

( iv ) homing.

3 ) use of VHF / DF :

( i ) availability, AIP and frequencies ;

( ii ) R / T procedures and ATC liaison ;

( iii ) obtaining a QDM and homing.

4 ) use of en - route or terminal radar :

( i ) availability and AIP ;

( ii ) procedures and ATC liaison ;

( iii ) pilot’s responsibilities ;

( iv ) secondary surveillance radar ;

( v ) transponders ;

( vi ) code selection ;

( vii ) interrogation and reply.

5 ) use of DME :

( i ) station selection and identification ;

( ii ) modes of operation.

6 ) use of GNSS ( RNAV – SATNAV ) :

( i ) setting up ;

( ii ) operation ;

( iii ) interpretation.

**EXERCISE 19 : *BASIC INSTRUMENT FLIGHT***

a ) Long Briefing objectives :

1 ) flight instruments ;

( i ) physiological sensations ;

( ii ) instrument appreciation ;

( iii ) attitude instrument flight ;

( iv ) pitch indications ;

( v ) bank indications ;

( vi ) different dial presentations ;

( vii ) introduction to the use of the attitude indicator ;

( viii ) pitch attitude ;

( ix ) bank attitude ;

( x ) maintenance of heading and balanced flight ;

( xi ) instrument limitations *( inclusive system failures ).*

2 ) attitude, power and performance ;

( i ) attitude instrument flight :

( ii ) control instruments ;

( iii ) performance instruments ;

( iv ) effect of changing power and configuration ;

( v ) cross - checking the instrument indications ;

( vi ) instrument interpretation ;

( vii ) direct and indirect indications *( performance instruments )* ;

( viii ) instrument lag ;

( ix ) selective radial scan.

3 ) basic flight manoeuvres *( full panel )* :

( i ) straight and level flight at various air speeds and aeroplane configurations ;

( ii ) climbing ;

( iii ) descending ;

( iv ) standard rate turns onto pre - selected headings :

(A) level ;

(B) climbing ;

(C) descending.

***b )*** *Air Exercise :*

1 ) Introduction to instrument flying :

( i ) flight instruments ;

( ii ) physiological sensations ;

( iii ) instrument appreciation ;

( iv ) attitude instrument flight ;

( v ) pitch attitude ;

( vi ) bank attitude ;

( vii ) maintenance of heading and balanced flight ;

2 ) attitude, power and performance :

( i ) attitude instrument flight ;

( ii ) effect of changing power and configuration ;

( iii ) cross - checking the instruments ;

( iv ) selective radial scan ;

3 ) basic flight manoeuvres *( full panel )* :

( i ) straight and level flight at various air speeds and aeroplane configurations ;

( ii ) climbing ;

( iii ) descending ;

( iv ) standard rate turns onto pre - selected headings :

(A) level ;

(B) climbing ;

(C) descending.

**EXERCISE 20 : *NIGHT FLYING*** *( if night instructional qualification required )*

***a )*** *Long Briefing objectives :*

1 ) start up procedures ;

2 ) local procedures : including ATC liaison ;

3 ) taxiing :

( i ) parking area and taxiway lighting ;

( ii ) judgement of speed and distances ;

( iii ) use of taxiway lights ;

( iv ) avoidance of hazards : obstruction lighting ;

( v ) instrument checks ;

( vi ) holding point : lighting procedure ;

( vii ) initial familiarization at night ;

( viii ) local area orientation ;

( ix ) significance of lights on other aircraft ;

( x ) ground obstruction lights ;

( xi ) division of piloting effort : external or instrument reference ;

( xii ) rejoining procedure ;

( xiii ) aerodrome lighting : approach and runway lighting *( including VASI and PAPI )* :

(A) threshold lights ;

(B) approach lighting ;

(C) visual approach slope indicator systems.

4 ) night circuits :

( i ) take-off and climb :

(A) line up ;

(B) visual references during the take-off run ;

(C) transfer to instruments ;

(D) establishing the initial climb ;

(E) use of flight instruments ;

(F) instrument climb and initial turn.

( ii ) circuit:

(A) aeroplane positioning : reference to runway lighting ;

(B) the traffic pattern and look-out ;

(C) initial approach and runway lighting demonstration ;

(D) aeroplane positioning ;

(E) changing aspect of runway lights and VASI *( or PAPI )* ;

(F) intercepting the correct approach path ;

(G) the climb away.

( iii ) approach and landing :

(A) positioning, base leg and final approach ;

(B) diurnal wind effect ;

(C) use of landing lights ;

(D) the flare and touchdown ;

(E) the roll out ;

(F) turning off the runway : control of speed.

( iv ) missed approach :

(A) use of instruments ;

(B) re-positioning in the circuit pattern ;

5 ) night navigation :

( i ) particular emphasis on flight planning ;

( ii ) selection of ground features visible at night :

(A) air light beacons ;

(B) effect of cockpit lighting on map colours ;

(C) use of radio aids ;

(D) effect of moonlight upon visibility at night ;

( iii ) emphasis on maintaining a “ Minimum Safe Altitude - MSA “ ;

( iv ) alternate aerodromes : restricted availability ;

( v ) restricted recognition of weather deterioration ;

( vi ) lost procedures ;

6 ) night emergencies ;

( i ) radio failure ;

( ii ) failure of runway lighting ;

( iii ) failure of aeroplane landing lights ;

( iv ) failure of aeroplane internal lighting ;

( v ) failure of aeroplane navigation lights ;

( vi ) total electrical failure ;

( vii ) abandoned take-off ;

( viii ) engine failure ;

( ix ) obstructed runway procedure.

***b )*** *Air Exercise :* during the air exercise all long briefing objectives mentioned above should also be trained on site and the student - instructor should demonstrate the following items :

1 ) how to plan and to perform a flight at night ;

2 ) how to advise the student pilot to plan and prepare a flight at night ;

3 ) how to advise the student pilot to perform a flight at night ;

4 ) how to analyze and correct errors as necessary.

**B. Helicopters**

*GROUND INSTRUCTION*

***Note :*** *During ground instruction the student - instructor should pay specific attention to the teaching of enhanced ground instruction in weather interpretation, planning and route assessment, decision making on encountering DVE including reversing course or conduction a precautionary landing.*

**Part 2*. AIR EXERCISES***

a ) The air exercises are similar to those used for the training of PPL ( H ) but with additional items designed to cover the needs of an FI ;

b ) 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 :

1 ) the applicant’s progress and ability ;

2 ) the weather conditions affecting the flight ;

3 ) the flight time available ;

4 ) instructional technique considerations ;

5 ) the local operating environment ;

6 ) applicability of the exercises to the helicopter type.

c ) It follows that student - instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

*GENERAL*

d ) The briefing normally includes a statement of the objectives and a brief reference to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practiced by the student during the flight. It should include how the flight will be conducted about who is to fly the helicopter and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught ;

e ) The four basic components of the briefing will be :

1 ) the aim ;

2 ) principles of flight *( briefest reference only ) ;*

3 ) the air exercise(s) *( what, and how and by whom )* ;

4 ) airmanship *( weather, flight safety etc... ).*

*PLANNING of FLIGHT LESSONS*

f ) The preparation of lesson plans is an essential prerequisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

*GENERAL CONSIDERATIONS*

g ) The student - instructor should complete flight training to practice the principles of basic instruction at the PPL ( H ) level ;

h ) During this training, except when acting as a student pilot for mutual flights, t he student - instructor occupies the seat normally occupied by the FI ( H ) ;

i ) It is to be noted that airmanship and look-out is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at all times ;

j ) If the privileges of the FI ( H ) certificate are to include instruction for night flying, exercise 28 should be undertaken either as part of the course or subsequent to certificate issue ;

k ) The student instructor should learn how to identify common errors and how to correct them properly, which should be emphasized at all times ;

l ) The student - instructor should be trained to keep in mind that wherever possible, flight simulation should be used to demonstrate to student pilots the effects of flight into DVE and to enhance their understanding and need for avoidance of this potentially fatal flight regime.

*SYLLABUS OF FLIGHT INSTRUCTION CONTENTS*

***LONG BRIEFINGS and AIR EXERCISES***

**EXERCISE 1 : *FAMILIARISATION with the HELICOPTER***

***a )*** *Long Briefing objectives :*

(1) introduction to the helicopter;

(2) explanation of the cockpit layout;

(3) helicopter and engine systems;

(4) checklist(s) and procedures;

(3) familiarisation with the helicopter controls;

(4) differences when occupying the instructor’s seat;

(5) emergency drills:

(i) action if fire in the air and on the ground: engine, cockpit or cabin and electrical fire;

(ii) system failure drills as applicable to type;

(iii) escape drills: location and use of emergency equipment and exits.

(b) Air exercise: all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 2 : *PREPARATION for and ACTION after FLIGHT***

(a) Long briefing objectives:

(1) flight authorization and helicopter acceptance, including technical log (if applicable) and certificate of maintenance:

(2) equipment required for flight (maps, etc.);

(3) external checks;

(4) internal checks;

(5) student comfort, harness, seat and rudder pedal adjustment;

(6) starting and after starting checks;

(7) system, power or serviceability checks ( as applicable);

(8) closing down or shutting down the helicopter ( including system checks ).

(9) parking and leaving the helicopter ( including safety or security as applicable );

(10) completion of authorization sheet and helicopter serviceability documents.

***b )*** *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 3 : *AIR EXPERIENCE***

***a )*** *Long Briefing objectives :*

***Note :*** *there is no requirement for a long briefing for this exercise.*

***b )*** *Air Exercise :*

(1) air experience;

(2) cockpit layout, ergonomics and controls;

(3) cockpit procedures: stability and control.

**EXERCISE 4 : *EFFECTS of CONTROLS***

***a )*** *Long Briefing objectives :*

(1) function of the flying controls (primary and secondary effect);

(2) effect of air speed;

(3) effect of power changes (torque);

(4) effect of yaw (sideslip);

(5) effect of disc loading (bank and flare);

(6) effect on controls of selecting hydraulics on/off;

(7) effect of control friction;

(8) use of instruments;

(9) operation of carburettor heat or anti-icing control.

***b )*** *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

EXERCISE 5: POWER AND ATTITUDE CHANGES

***a )*** *Long Briefing objectives :*

(1) relationship between cyclic control position, disc attitude, fuselage attitude and air speed flap back;

(2) power required diagram in relation to air speed;

(3) power and air speed changes in level flight;

(4) use of the instruments for precision;

(5) engine and air speed limitations;

***b )*** *Air Exercise :*

(1) relationship between cyclic control position, disc attitude, fuselage attitude and air speed flap back;

(2) power and air speed changes in level flight;

(3) use of instruments for precision (including instrument scan and look-out).

**EXERCISE 6 : *LEVEL FLIGHT, CLIMBING, DESCENDING and TURNING***

***Note :*** *for ease of training this exercise is divided into four separate parts in the*

*PPL ( H ) syllabus but may be taught complete or in convenient parts.*

***a )*** *Long Briefing objectives :*

(1) basic factors involved in level flight;

(2) normal power settings;

(3) use of control friction or trim;

(4) importance of maintaining direction and balance;

(5) power required or power available diagram;

(6) optimum climb and descent speeds, angles or rates;

(7) importance of balance, attitude and co-ordination in the turn;

(8) effects of turning on rate of climb or descent;

(9) use of the gyro direction or heading indicator and compass;

(10) use of instruments for precision.

***b )*** *Air Exercise :*

(1) maintaining straight and level flight at normal cruise power;

(2) control in pitch, including use of control friction or trim;

(3) use of the ball or yaw string to maintain direction and balance;

(4) setting and use of power for selected air speeds and speed changes;

(5) entry to climb;

(6) normal and maximum rate of climb;

(7) leveling off from climb at selected altitudes or heights;

(8) entry to descent;

(9) effect of power and air speed on rate of descent;

(10) leveling off from descent at selected altitudes or heights;

(11) entry to medium rate turns;

(12) importance of balance, attitude and co-ordination to maintain level turn;

(13) resuming straight and level flight;

(14) turns onto selected headings, use of direction indicator and compass;

(15) turns whilst climbing and descending;

(16) effect of turn on rate of climb or descent;

(17) use of instruments for precision (including instrument scan and look-out).

**EXERCISE 7 : *AUTOROTATION***

***a )*** *Long Briefing objectives :*

(1) characteristics of autorotation;

(2) safety checks (including look-out and verbal warning);

(3) entry and development of autorotation;

(4) effect of AUM, IAS, disc loading, G forces and density altitude on RRPM and rate of descent;

(5) rotor and engine limitations;

(6) control of air speed and RRPM;

(7) recovery to powered flight;

(8) throttle override and control of ERPM or RRPM during re- engagement (as applicable);

(9) danger of vortex condition during recovery.

***b )*** *Air Exercise :*

(1) safety checks (including verbal warning and look-out);

(2) entry to and establishing in autorotation;

(3) effect of IAS and disc loading on RRPM and rate of descent;

(4) control of air speed and RRPM;

(5) recovery to powered flight;

(6) medium turns in autorotation;

(7) simulated engine off landing (as appropriate).

EXERCISE 8: HOVERING AND HOVER TAXIING

***a )*** *Long Briefing objectives :*

(1) ground effect and power required;

(2) effect of wind, attitude and surface;

(3) stability in hover and effects of over controlling;

(4) effect of control in hover;

(5) control and co-ordination during spot turns;

(6) requirement for slow hover speed to maintain ground effect;

(7) effect of hydraulic failure in hover;

(8) specific hazards, for example snow, dust, etc.

***b )*** *Air Exercise :*

(1) ground effect and power or height relationship;

(2) effect of wind, attitude and surface;

(3) stability in hover and effects of over controlling;

(4) effect of control and hover technique;

(5) gentle forward running touchdown;

(6) control and co-ordination during spot (90 ° clearing) turns;

(7) control and co-ordination during hover taxi;

(8) dangers of mishandling and over pitching;

(9) (where applicable) effect of hydraulics failure in hover;

(10) simulated engine failure in the hover and hover taxi.

EXERCISE 9: TAKE-OFF AND LANDING

***a )*** *Long Briefing objectives :*

(1) pre take-off checks or drills;

(2) importance of good look-out;

(3) technique for lifting to hover;

(4) after take-off checks;

(5) danger of horizontal movement near ground;

(6) dangers of mishandling and over pitching;

(7) technique for landing;

(8) after landing checks;

(9) take-off and landing crosswind and downwind.

***b )*** *Air Exercise :*

(1) pre take-off checks or drills:

(2) pre take-off look-out technique;

(3) lifting to hover;

(4) after take-off checks;

(5) landing;

(6) after landing checks or drills;

(7) take-off and landing crosswind and downwind.

**EXERCISE 10 : *TRANSITIONS from HOVER to CLIMB and APPROACH to HOVER***

***a )*** *Long Briefing objectives :*

(1) revision of ground effect;

(2) translational lift and its effects;

(3) inflow roll and its effects;

(4) revision of flap back and its effects;

(5) avoidance of curve diagram and associated dangers;

(6) effect or dangers of wind speed and direction during transitions;

(7) transition to climb technique;

(8) constant angle approach;

(9) transition to hover technique.

***b )*** *Air Exercise :*

(1) revision of take-off and landing;

(2) transition from hover to climb;

(3) effect of translational lift, inflow roll and flap back;

(4) constant angle approach;

(5) technique for transition from descent to hover;

(6) a variable flare simulated engine off landing.

**EXERCISE 11 : *CIRCUIT, APPROACH and LANDING***

***a )*** *Long Briefing objectives :*

(1) circuit and associated procedures;

(2) take-off and climb (including checks or speeds);

(3) crosswind leg (including checks, speeds or angles of bank in turns);

(4) downwind leg (including pre-landing checks);

(5) base leg (including checks, speeds or angles of bank in turns);

(6) final approach (including checks or speeds);

(7) effect of wind on approach and hover IGE;

(8) crosswind approach and landing technique;

(9) missed approach and go-around technique (as applicable);

(10) steep approach technique (including danger of high sink rate);

(11) limited power approach technique (including danger of high speed at touchdown);

(12) use of the ground effect ;

(13) abandoned take-off technique;

(14) hydraulic failure drills and hydraulics off landing technique (where applicable);

(15) drills or technique for tail rotor control or tail rotor drive failure;

(16) engine failure drills in the circuit to include;

(17) engine failure

(18) on take-off:

(i) crosswind;

(ii) downwind;

(iii) base leg;

(iv) on final approach.

(19) noise abatement procedures (as applicable).

***b )*** *Air Exercise :*

(1) revision of transitions and constant angle approach;

(2) basic training circuit, including checks;

(3) crosswind approach and landing technique;

(4) missed approach and go-around technique (as applicable);

(5) steep approach technique;

(6) basic limited power approach or run on technique;

(7) use of ground effect;

(8) hydraulic failure and approach to touchdown with hydraulics off and to recover at safe height (as applicable);

(9) simulated engine failure on take-off, crosswind, downwind, base leg and finals;

(10) variable flare simulated engine off landing.

**EXERCISE 12 : *FIRST SOLO***

***a )*** *Long Briefing objectives :*

(1) warning of change of attitude due to reduced and laterally displaced weight;

(2) low tail, low skid or wheel during hover or landing;

(3) dangers of loss of RRPM and over pitching;

(4) pre take-off checks;

(5) into wind take-off;

(6) drills during and after take-off;

(7) normal circuit, approach and landing;

(8) action if an emergency.

***b )*** *Air Exercise :*  all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 13 : *SIDEWAYS and BACKWARDS HOVER MANOEUVRING***

***a )*** *Long Briefing objectives :*

(1) revision of hovering;

(2) directional stability and weather cocking effect;

(3) danger of pitching nose down on recovery from backwards manoeuvring;

(4) helicopter limitations for sideways and backwards manoeuvring;

(5) effect of CG position.

***b )*** *Air Exercise :*

(1) revision of hovering and 90 ° clearing turns;

(2) manoeuvring sideways heading into wind;

(3) manoeuvring backwards heading into wind;

(4) manoeuvring sideways and backwards heading out of wind;

(5) manoeuvring backwards too fast and recovery action.

**EXERCISE 14 : *SPOT TURNS***

***a )*** *Long Briefing objectives :*

(1) revision of ground effect and effect of wind;

(2) weather cocking and control actions;

(3) control of RRPM;

(4) torque effect;

(5) cyclic limiting stops due to CG position (where applicable);

(6) rate of turn limitations;

(7) spot turn about pilot position;

(8) spot turn about tail rotor position;

(9) spot turn about helicopter geometric centre;

(10) square (safe visibility) and clearing turn.

***b )*** *Air Exercise :*

(1) weather cocking, torque effect and control actions;

(2) rate of turn;

(3) spot turn about pilot position;

(4) spot turn about tail rotor position;

(5) spot turn about helicopter geometric centre;

(6) square and clearing turn.

**EXERCISE 15 : *HOVER out of GROUND EFFECT and VORTEX RING***

***a )*** *Long Briefing objectives :*

(1) revision of ground effect and power required diagram;

(2) drift, height and power control, look-out or scan;

(3) vortex ring, (including dangers, recognition and recovery actions);

(4) loss of tail rotor effectiveness.

***b )*** *Air Exercise :*

(1) to demonstrate hover OGE;

(2) drift, height, power control and look-out, and instrument scan technique;

(3) recognition of incipient stage of vortex ring and settling with power;

(4) recovery action from incipient stage of vortex ring;

(5) recognition of loss of tail rotor effectiveness and recovery actions.

**EXERCISE 16 : *SIMULATED ENGINE - OFF LANDINGS***

***a )*** *Long Briefing objectives :*

(1) revision of basic autorotation;

(2) effect of AUM, disc loading, density altitude and RRPM decay;

(3) use of cyclic and collective to control speed or RRPM;

(4) torque effect;

(5) use of flare or turn to restore RRPM;

(6) technique for variable flare simulated EOL;

(7) technique for constant attitude simulated EOL;

(8) revision of technique for hover or hover taxi simulated EOL;

(9) emergency technique for engine failure during transition;

(10) technique for low level simulated EOL.

***b )*** *Air Exercise :*

(1) revision of entry to and control in autorotation;

(2) variable flare simulated EOL

(3) constant attitude simulated EOL;

(4) hover simulated EOL;

(5) hover taxi simulated EOL;

(6) low level simulated EOL.

**EXERCISE 17 : *ADVANCED AUTOROTATIONS***

***a )*** *Long Briefing objectives :*

(1) effect of air speed or AUM on angles or rates of descent

(2) effect of RRPM setting on angle or rate of descent;

(3) reason and technique for range autorotation;

(4) reason and technique for constant attitude autorotation;

(5) reason and technique for low speed and ‘S’ turns in autorotation;

(6) speed or bank limitations in turns in autorotation;

(7) revision of re-engagement or go-around procedures.

***b )*** *Air Exercise :*

(1) selection of ground marker and standard datum height to determine distance covered during various autorotation techniques;

(2) revision of basic autorotation;

(3) technique for range autorotation;

(4) technique for constant attitude autorotation;

(5) technique for low speed autorotation, including need for timely speed recovery;

(6) technique for ‘S’ turn in autorotation;

(7) 180 and 360 ° turns in autorotation;

(8) revision of re-engagement and go-around technique.

**EXERCISE 18 : *PRACTICE FORCED LANDINGS***

***a )*** *Long Briefing objectives :*

(1) types of terrain or surface options for choice of best landing area;

(2) practice forced landing procedure;

(3) forced landing checks and crash actions;

(4) rules or height for recovery and go-around.

***b )*** *Air Exercise :*

(1) recognition of types of terrain from normal cruise height or altitude;

(2) practice forced landing technique;

(3) revision of recovery or go-around technique.

**EXERCISE 19 : *STEEP TURNS***

***a )*** *Long Briefing objectives :*

(1) air speed or angle of bank limitations;

(2) technique for co-ordination to hold bank or attitude;

(3) revision of speed or bank limitations in autorotation including RRPM control;

(4) significance of disc loading, vibration and control feedback;

(5) effect of wind in turns at low level.

***b )*** *Air Exercise :*

(1) technique for turning at 30 ° of bank;

(2) technique for turning at 45 ° of bank (where possible);

(3) steep autorotative turns;

(4) explanation of faults in the turn: balance, attitude, bank and co- ordination;

(5) effect of wind at low level.

**EXERCISE 20 : *TRANSITIONS***

***a )*** *Long Briefing objectives :*

(1) revision of effect of ground cushion, translational lift and flap back;

(2) training requirement for precision exercise;

(3) technique for transition to forward flight and back to hover as precision exercise;

(4) effect of wind.

***b )*** *Air Exercise :*

(1) transition from hover to minimum 50 knots IAS and back to hover;

***Note :*** *select constant height ( 20 - 30 ft ) and maintain.*

(2) effect of wind.

**EXERCISE 21 : *QUICK STOPS***

***a )*** *Long Briefing objectives :*

(1) power control co-ordination;

(2) revision of effect of wind;

(3) technique for quick stop into wind;

(4) technique for quick stop from crosswind;

(5) revision of air speed and angles of bank limitations;

(6) technique for emergency turn from downwind;

(7) technique for quick stop from downwind from high speed: flare and turn;

(8) technique for quick stop from downwind from low speed: turn and flare;

***Note :*** *use reasonable datum speed for example high speed, low speed.*

(9) danger of holding flare when downwind, (vortex ring) - (minimum speed 70 knots);

(10) to revise danger of high disc loading.

***b )*** *Air Exercise :*

(1) technique for quick stop into wind;

(2) technique for quick stop from crosswind;

(3) danger of vortex ring and disc loading;

(4) technique for quick stop from downwind with low speed;

(5) technique for quick stop from downwind with high speed;

(6) emergency turns from downwind.

**EXERCISE 22 : *NAVIGATION***

***a )*** *Long Briefing objectives :*

***Note :*** *to be broken down into manageable parts at discretion of instructor.*

(1) flight planning:

(i) weather forecasts and actuals;

(ii) map selection, orientation, preparation and use:

(A) choice of route;

(B) regulated or controlled airspace;

(C) danger, prohibited and restricted areas;

(D) safety altitude.

(iii) calculations:

(A) magnetic heading(s), time(s) en route;

(B) fuel consumption;

(C) mass and balance.

(iv) flight information:

(A) NOTAMs etc;

(B) noting of required radio frequencies;

(C) selection of alternate landing sites.

(v) helicopter documentation;

(vi) notification of the flight:

(A) pre-flight administration procedures;

(B) flight plan form (where appropriate).

(2) departure:

(i) organisation of cockpit workload;

(ii) departure procedures:

(A) altimeter settings;

(B) ATC liaison in controlled or regulated airspace;

(C) setting heading procedure;

(D) noting of ETA(s);

(E) maintenance of height or altitude and heading.

(iii) procedure for revisions of ETA and headings to include:

(A) 10 ° line, double track, track error and closing angle;

(B) 1 in 60 rule;

(iv) amending an ETA;

(v) log keeping;

(vi) use of radio;

(vii) use of navaids;

(viii) weather monitoring and minimum weather conditions for continuation of flight;

(ix) significance of in-flight decision making;

(x) technique for transiting controlled or regulated airspace;

(xi) uncertainty of position procedure;

(xii) lost procedure.

(3) arrival:

(i) aerodrome joining procedure, in particular ATC liaison in controlled or regulated airspace:

(A) altimeter setting;

(B) entering traffic pattern;

(C) circuit procedures.

(ii) parking procedures, in particular:

(A) security of helicopter;

(B) refuelling;

(C) closing of flight plan, (if appropriate);

(D) post flight administrative procedures.

(4) navigation problems at low heights and reduced visibility:

(i) actions before descending;

(ii) significance of hazards, (for example obstacles and other traffic);

(iii) difficulties of map reading;

(iv) effects of wind and turbulence;

(v) significance of avoiding noise sensitive areas;

(vi) procedures for joining a circuit from low level;

(vii) procedures for a bad weather circuit and landing;

(viii) actions in the event of encountering DVE;

(ix) appropriate procedures and choice of landing area for precautionary landings;

(x) decision to divert or conduct precautionary landing;

(xi) precautionary landing.

(5) radio navigation:

(i) use of VOR:

(A) availability, AIP and frequencies;

(B) selection and identification;

(C) use of OBS;

(D) to or from indications: orientation;

(E) use of CDI;

(F) determination of radial;

(G) intercepting and maintaining a radial;

(H) VOR passage;

(I) obtaining a fix from two VORs.

(ii) use of ADF equipment:

(A) availability of NDB stations, AIP and frequencies;

(B) selection and identification;

(C) orientation relative to beacon;

(D) homing.

(iii) use of VHF/DF

(A) availability, AIP and frequencies;

(B) R/T procedures and ATC liaison;

(C) obtaining a QDM and homing.

(iv) use of en-route or terminal radar:

(A) availability and AIP;

(B) procedures and ATC liaison;

(C) pilots responsibilities;

(D) secondary surveillance radar:

(a) transponders;

(b) code selection;

(E) interrogation and reply.

(iv) use of DME:

(A) station selection and identification;

(B) modes of operation: distance, groundspeed and time to run.

(v) use of GNSS:

(A) selection of waypoints;

(B) to or from indications and orientation;

(C) error messages;

(D) hazards of over-reliance in the continuation of flight in DVE.

***b )*** *Air Exercise :*

(1) navigation procedures as necessary;

(2) to advise student and correct errors as necessary;

(3) map reading techniques;

(4) the significance of calculations;

(5) revision of headings and ETA’s;

(6) use of radio;

(7) use of navaids: ADF/NDB, VOR, VHF/DF, DME and transponder;

(8) cross-country flying by using visual reference, DR, GNNS and, where available, radio navigation aids; simulation of deteriorating weather conditions and actions to divert or conduct precautionary landing;

(8) log keeping;

(9) importance of decision making;

(10) procedure to deal with uncertainty of position;

(11) lost procedure;

(12) appropriate procedures and choice of landing area for precautionary landings;

(13) aerodrome joining procedure;

(14) parking and shut-down procedures;

(15) post-flight administration procedures.

**EXERCISE 23 : *ADVANCED TAKE - OFF, LANDINGS and TRANSITIONS***

***a )*** *Long Briefing objectives :*

(1) revision of landing and take-off out of wind (performance reduction);

(2) revision of wind limitations;

(3) revision of directional stability variation when out of wind;

(4) revision of power required diagram;

(5) technique for downwind transitions;

(6i) technique for vertical take-off over obstacles;

(7) reconnaissance technique for landing site;

(8) power checks;

(9) technique for running landing;

(10) technique for zero speed landing;

(11) technique for crosswind and downwind landings;

(12) steep approach, including dangers;

(13) revision of go-around procedures.

***b )*** *Air Exercise :*

(1) technique for downwind transition;

(2) technique for vertical take-off over obstacles;

(3) reconnaissance technique for landing site;

(4) power check and assessment;

(5) technique for running landing;

(6) technique for zero speed landing;

(7) technique for crosswind and downwind landings;

(8) technique for steep approach;

(9) go-around procedures.

**EXERCISE 24 : *SLOPING GROUND***

***a )*** *Long Briefing objectives :*

(1) limitations;

(2) wind and slope relationship, including blade and control stops;

(3) effect of CG when on slope;

(4) ground effect and power required when on slope;

(5) landing technique when on slope, left, right and nose-up;

(6) avoidance of dynamic rollover, dangers of soft ground and sideways movement;

(7) dangers of over controlling near ground on slope;

(8) danger of striking main or tail rotor on up slope.

***b )*** *Air Exercise :*

(1) technique for assessing slope angle;

(2) technique for landing and take-off left skid up slope;

(3) technique for landing and take-off right skid up slope;

(4) technique for landing nose up slope;

(5) dangers of over controlling near ground.

**EXERCISE 25 : *LIMITED POWER***

***a )*** *Long Briefing objectives :*

(1) use of appropriate helicopter performance graphs;

(2) selection of technique according to available power;

(3) effect of wind on available power.

***b )*** *Air Exercise :* to revise and refine techniques demonstrated in exercise 23.

**EXERCISE 26 : *CONFINED AREAS***

***a )*** *Long Briefing objectives :*

(1) revision of use of helicopter performance graphs;

(2) procedure for locating landing site and selecting site marker;

(3) procedures for assessing wind speed and direction;

(4) landing site reconnaissance techniques;

(5) reason for selecting landing markers;

(6) procedure for selecting direction and type of approach;

(7) dangers of out of wind approach;

(8) circuit procedures;

(9) reason for approach to committal point and go-around, (practice approach);

(10) approach technique;

(11) revision of clearing turn and landing (sloping ground technique);

(12) hover power check or performance assessment IGE and OGE (if necessary);

(13) take-off procedures.

***b )*** *Air Exercise :*

(1) procedures for locating landing site and selecting site marker;

(2) procedures for assessing wind speed and direction;

(3) landing site reconnaissance techniques;

(4) selecting landing markers, direction and type of approach;

(5) circuit procedure;

(6) practice approach, go-around and approach technique;

(7) revision of clearing turn and landing (sloping ground technique);

(8) hover power check or performance assessment IGE and OGE (if necessary);

(9) take-off procedures.

**EXERCISE 27 : *BASIC INSTRUMENT FLIGHT***

***a )*** *Long Briefing objectives :*

(1) physiological sensations;

(2) instrument appreciation;

(3) attitude instrument flight;

(4) instrument scan;

(5) instrument limitations;

(6) basic manoeuvres by sole reference to instruments:

(i) straight and level flight at various air speeds and configurations;

(ii) climbing and descending;

(iii) standard rate turns, climbing and descending, onto selected headings;

(iv) recoveries from climbing and descending turns (unusual attitudes).

***b )*** *Air Exercise :*

(1) attitude instrument flight and instrument scan;

(2) basic manoeuvres by sole reference to instruments:

(i) straight and level flight at various air speeds and configurations;

(ii) climbing and descending;

(iii) standard rate turns, climbing and descending, onto selected headings;

(iv) recoveries from climbing and descending turns (unusual attitudes).

**EXERCISE 28 : *NIGHT FLYING*** *( if night instructional qualification required )*

***a )*** *Long Briefing objectives :*

(1) medical or physiological aspects of night vision;

(2) requirement for torch to be carried (pre-flight inspection, etc.);

(3) use of the landing light;

(4) take-off and hover taxi procedures at night;

(5) night take-off procedure;

(6) cockpit procedures at night;

(7) approach techniques;

(8) night landing techniques;

(9) night autorotation techniques (power recovery at safe height);

(10) technique for practice forced landing at night (using appropriate illumination);

(11) emergency procedures at night;

(12) navigation principles at night;

(13) map marking for night use (highlighting built up or lit areas with thicker lines, etc.).

***b )*** *Air Exercise :*

(1) use of torch for pre-flight inspection;

(2) use of landing light;

(3) night take-off to hover (no sideways or backwards movement);

(4) night hover taxi (higher and slower than by day);

(5) night transition procedure;

(6) night circuit;

(7) night approach and landing (including use of landing light);

(8) night autorotation (power recovery at safe height);

(9) practice forced landing at night (using appropriate illumination);

(10) night emergency procedures;

(11) night cross country techniques, as appropriate.

**C. Airships**

**Part 2. *AIR EXERCISES***

a ) The air exercises are similar to those used for the training of PPL ( As ) but with additional items designed to cover the needs of an FI ;

b ) 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 :

(1) the applicant’s progress and ability;

(2) the weather conditions affecting the flight;

(3) the flight time available;

(4) instructional technique considerations;

(5) the local operating environment.

c ) It follows that student - instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

*GENERAL*

d ) The briefing normally includes a statement of the aim and a brief allusion to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practiced by the student during the flight. It should include how the flight will be conducted about who is to fly the airship and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught ;

e ) The four basic components of the briefing will be :

(1) the aim;

(2) principles of flight (briefest reference only);

(3) the air exercise(s) (what, and how and by whom);

(4) airmanship (weather, flight safety etc.).

*PLANNING of FLIGHT LESSONS*

f ) The preparation of lesson plans is an essential prerequisite of good instruction and the student - instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

*GENERAL CONSIDERATIONS*

g ) The student - instructor should complete flight training to practice the principles of basic instruction at the PPL ( As ) level ;

h ) During this training, except when acting as a student pilot for mutual flights, the student- instructor occupies the seat normally occupied by the FI ( As ) ;

i ) It is to be noted that airmanship and look-out is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at all times ;

j ) The exercises 15 and 16 of the flight instruction syllabus should be undertaken at night in addition to by day as part of the course ;

k ) The student - instructor should learn how to identify common errors and how to correct them properly, which should be emphasized at all times.

*SYLLABUS of FLIGHT INSTRUCTION CONTENTS*

**LONG BRIEFINGS and AIR EXERCISES**

***Note :*** *although Exercise 16 is not required for the PPL ( As ) course it is a requirement for the FI ( As ) course.*

**EXERCISE 1 : *FAMILIARISATION with the AIRSHIP***

***a )*** *Long Briefing objectives :*

(1) introduction to the airship;

(2) characteristics of the airship;

(3) cockpit layout;

(4) airship and engine systems;

(5) use of the checklist(s) and procedures;

(6) to familiarize the student with the airship controls;

(7) differences when occupying the instructor’s seat;

(8) emergency drills:

(i) action if fire in the air or on the ground: engine, cockpit or cabin and electrical fire;

(ii) system failure drills as applicable to type;

(iii) escape drills: location and use of emergency equipment and exits.

***b )***  *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 2 : *PREPARATION for and ACTION after FLIGHT***

***a )*** *Long Briefing objectives :*

(1) flight authorisation and airship acceptance including tech log (if applicable) and certificate of maintenance;

(2) equipment required for flight (maps, etc.);

(3) external checks;

(4) internal checks;

(5) student comfort, harness, seat and rudder pedal adjustment;

(6) starting and after starting checks;

(7) system, power or serviceability checks (as applicable);

(8) closing down or shutting down the airship (including system checks);

(9) parking, masting and unmasting, leaving the airship (including safety or security as applicable);

(10) completion of the authorisation sheet and airship serviceability documents;

***b )***  *Air Exercise :* all long briefing objectives mentioned above should also be trained on site during the air exercise.

**EXERCISE 3 : *AIR EXPERIENCE***

***a )*** *Long Briefing objectives :*

Note: there is no requirement for a long briefing for this exercise.

***b )***  *Air Exercise :*

(1) air experience;

(2) cockpit layout, ergonomics and controls;

(3) cockpit procedures: stability and control.

**EXERCISE 4 : *EFFECTS of CONTROLS***

***a )*** *Long Briefing objectives :*

(1) function of the flying controls (primary and secondary effect);

(2) effect of air speed;

(3) effect of power changes;

(4) effect of trimming and other controls;

(5) use of instruments;

(6) use of carburettor heat.

***b )***  *Air Exercise :*

(1) function of the flying controls;

(2) effect of air speed;

(3) effect of power changes;

(4) effect of trimming and other controls;

(5) use of instruments (including instrument scan);

(6) use of carburettor heat.

**EXERCISE 5 : *GROUND MANOEUVERING***

***a )*** *Long Briefing objectives :*

(1) pre-taxi checks;

(2) starting, control of speed and stopping;

(3) engine handling;

(4) masting procedures;

(5) control of direction and turning;

(6) effects of wind;

(7) effects of ground surface;

(8) marshalling signals;

(9) instrument checks;

(10) ATC procedures;

(11) emergencies.

***b )***  *Air Exercise :*

(1) starting, control of speed and stopping;

(2) engine handling;

(3) masting procedures;

(4) control of direction and turning;

(5) effect of wind.

**EXERCISE 6 : *TAKE - OFF PROCEDURES***

***a )*** *Long Briefing objectives :*

(1) pre take-off checks;

(2) take-off with different static heaviness;

(3) drills during and after take-off;

(4) noise abatement procedures.

***b )***  *Air Exercise :*

(1) take-off with different static heaviness;

(2) drills during and after take-off.

**EXERCISE 6 e : *EMERGENCIES***

***a )*** *Long Briefing objectives :*

(1) abandoned take-off;

(2) engine failures and actions after take-off;

(3) malfunctions of thrust vector control;

(4) aerodynamic control failures;

(5) electrical and system failures.

***b )***  *Air Exercise :*

(1) how to abandon a take-off;

(2) engine failure and suitable action;

(3) malfunctions of thrust vector control;

(4) aerodynamic control failures.

**EXERCISE 7 : *CLIMBING***

***a )*** *Long Briefing objectives :*

(1) entry and how to maintain the normal and max rate of climb;

(2) leveling off procedure;

(3) how to level off at selected altitudes;

(4) maximum angle of climb;

(5) maximum rate of climb.

***b )***  *Air Exercise :*

(1) how to level off at selected altitudes;

(2) maximum angle of climb.

**EXERCISE 8 : *STRAIGHT and LEVEL FLIGHT***

***a )*** *Long Briefing objectives :*

(1) how to attain and maintain straight and level flight;

(2) flight at or close to pressure height;

(3) control in pitch, including use of trim;

(4) at selected air speeds (use of power);

(5) during speed changes;

(6) use of instruments for precision.

***b )***  *Air Exercise :*

(1) how to attain and maintain straight and level flight;

(2) flight at or close to pressure height;

(3) control in pitch, including use of trim;

(4) at selected air speeds (use of power);

(5) during speed changes.

**EXERCISE 9 : *DESCENDING***

***a )*** *Long Briefing objectives :*

(1) entry, maintaining and leveling off techniques;

(2) leveling off at selected altitudes;

(3) maximum rate of descent;

(4) maximum angle of descent;

(5) use of instruments for precision flight.

***b )***  *Air Exercise :*

(1) leveling off at selected altitudes;

(2) maximum rate of descent;

(3) maximum angle of descent.

**EXERCISE 10 : *TURNING***

***a )*** *Long Briefing objectives :*

(1) entry and maintaining level turns;

(2) resuming straight flight;

(3) faults in the turn;

(4) climbing turns;

(5) descending turns;

(6) turns to selected headings: use of gyro heading indicator and compass;

(7) use of instruments for precision.

***b )***  *Air Exercise :*

(1) faults in the turn and correction techniques;

(2) climbing turns;

(3) descending turns.

**EXERCISE 11 : *HOVERING***

***a )*** *Long Briefing objectives :*

hovering manoeuvres (as applicable).

***b )*** *Air Exercise :* hovering manoeuvres (as applicable)

**EXERCISE 12 : *APPROACH and LANDING***

***a )*** *Long Briefing objectives :*

(1) effect of wind on approach and touchdown speeds;

(2) landing with different static heaviness;

(3) missed approach and go-around procedures;

(4) noise abatement procedures.

***b )***  *Air Exercise :*

(1) a landing with different static heaviness;

(2) missed approach and go-around procedures.

**EXERCISE 12 e : *EMERGENCIES***

***a )*** *Long Briefing objectives :*

(1) aborted approach or go-around;

(2) malfunction of thrust vector control;

(3) envelope emergencies;

(4) fire emergencies;

(5) aerodynamic control failures;

(6) electrical and system failures.

***b )***  *Air Exercise :* emergency drills and actions.

**EXERCISE 13 : *PRECAUTIONARY LANDING***

***a )*** *Long Briefing objectives :*

(1) occasions necessitating a precautionary landing;

(2) in-flight conditions;

(3) landing area selection; (4) circuit and approach.

***b )***  *Air Exercise :*

(1) how to perform the landing area selection;

(2) circuit and approach.

**EXERCISE 14 a : *NAVIGATION***

***a )*** *Long Briefing objectives :*

(1) how to do the flight planning;

(2) departure for a navigation flight;

(3) in-flight navigational techniques;

(4) arrival and aerodrome joining procedures;

***b )***  *Air Exercise :*

(1) complete flight planning of a navigation flight;

(2) departure for a navigation flight;

(3) in-flight navigational techniques;

(4) arrival and aerodrome joining procedures.

**EXERCISE 14 b : *NAVIGATION at lower LEVELS and in REDUCED VISIBILITY***

***a )*** *Long Briefing objectives :*

(1) actions before descending;

(2) possible hazards (for example obstacles and terrain) and actions;

(3) student difficulties of map reading;

(4) effects of winds, turbulence and precipitation;

(5) vertical situational awareness;

(6) avoidance of noise sensitive areas;

(7) joining the circuit;

(8) bad weather circuit and landing.

***b )***  *Air Exercise :*

(1) actions before descending;

(2) map reading techniques;

(3) vertical situational awareness;

(4) avoidance of noise sensitive areas;

(5) joining the circuit;

(6) bad weather circuit and landing.

**EXERCISE 14 c : *RADIO NAVIGATION***

***a )*** *Long Briefing objectives :*

(1) use of VOR;

(2) use of ADF equipment;

(3) use of NDB stations;

(4) use of VHF/DF;

(5) use of en-route or terminal radar;

(6) use of DME equipment.

***b )***  *Air Exercise :*

(1) use of navaids;

(2) procedure to deal with uncertainty of position.

**EXERCISE 15 : *BASIC INSTRUMENT FLIGHT***

***a )*** *Long Briefing objectives :*

(1) physiological sensations;

(2) instrument appreciation;

(3) attitude instrument flight;

(4) instrument scan;

(5) instrument limitations;

(6) basic manoeuvres by sole reference to the instruments:

(i) straight and level;

(ii) climbing and descending;

(iii) turns, climbing and descending, onto selected headings;

(iv) recoveries from climbing and descending turns.

***b )***  *Air Exercise :*

(1) attitude instrument flight and instrument scan;

(2) the basic manoeuvres:

(i) straight and level;

(ii) climbing and descending;

(iii) turns, climbing and descending, onto selected headings;

(iv) recoveries from climbing and descending turns.

**EXERCISE 16 : *NIGHT FLYING*** *( if night instructional qualification required )*

***a )*** *Long Briefing objectives :*

(1) medical and physiological aspects of night vision;

(2) requirement for torch to be carried (pre-flight inspection, etc.);

(3) use of the landing light;

(4) ground manoeuvring procedures at night;

(5) night take-off procedure;

(6) cockpit procedures at night;

(7) approach techniques;

(8) night landing techniques

(9) emergency procedures at night;

(10) navigation principles at night.

***b )***  *Air Exercise :*

(1) use of landing light;

(2) night ground manoeuvring;

(3) night take-off, circuit or approach and landing (including use of landing light).

***AMC 2.* FCL. 930. FI FI — Training Course**

*FI ( S ) and FI ( B ) TRAINING COURSE GENERAL*

a ) The aim of the FI(S) and FI(B) training course is to train SPL and BPL holders to the level of competence defined in FCL. 920 as instructor competencies ;

b ) The training course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the FI task including at least the following :

(1) refresh the technical knowledge of the student instructor;

(2) train the student instructor to teach the ground subjects and air exercises;

(3) ensure that the student instructor’s flying is of a sufficiently high standard; and

(4) teach the student instructor the principles of basic instruction and to apply them..at all training levels.

c ) With the exception of the section on teaching and learning, all the subject detail contained in the ground and flight training syllabus is complementary to the SPL and BPL course syllabus ;

d ) The FI training course should give particular stress to the role of the individual in relation to the importance of human factors in the man-machine and theoretical knowledge environment interaction. Special attention should be paid to the applicant’s maturity and judgement including an understanding of adults, their behavioural attitudes and variable levels of education

e ) During the training course, the applicants should be made aware of their own attitudes to the importance of flight safety. Improving safety awareness should be a fundamental objective throughout the training course. It will be of major importance for the training course to aim at giving applicants the knowledge, skills and attitudes relevant to a flight instructor’s task ;

f ) On successful completion of the training course and final test the applicant may be issued with an FI Certificate.

*CONTENT*

g ) The training course consists of two parts :

1) Part 1, theoretical knowledge including the teaching and learning instruction that should comply with AMC 1. FCL. 920 ;

2 ) Part 2, Flight Instruction.

**Part 1.**

The content of the teaching and learning part of the FI Course, as established in AMC1. FCL. 930. FI, should be used as guidance to develop the course syllabus.

The course should include at least 55 hours of theoretical knowledge including at least 25 hrs teaching and learning instructions for the FI ( S ) and FI ( B ) Certificate.

**Part 2. *FLIGHT INSTRUCTION SYLLABUS***

An approved FI Training Course should comprise at least the minimum hours of flight instruction as defined in FCL. 930. FI.

*AIR EXERCISES*

a ) The air exercises are similar to those used for the training of SPL or BPL but with additional items designed to cover the needs of a flight instructor ;

b ) 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 :

1 ) the applicant’s progress and ability ;

2 ) the weather conditions affecting the flight ;

3 ) the flight time available ;

4 ) instructional technique considerations ;

5 ) the local operating environment ;

6 ) Applicability of the exercises to the aircraft type.

c ) At the discretion of the instructors some of the exercises may be combined whereas some other exercises may be done in several flights ;

d ) It follows that student instructors will eventually be faced with similar inter-related factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

*GENERAL*

e ) The briefing normally includes a statement of the aim and a brief allusion to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practiced by the student during the flight. It should include how the flight will be conducted with regard to who is to fly the aircraft and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught ;

f ) The five basic components of the briefing will be :

1 ) the aim ;

2 ) the air exercise(s) ( what, and how and by whom) ;

3 ) flight briefing ;

4 ) check of understanding ;

5 ) airmanship.

*PLANNING of FLIGHT LESSONS*

g ) The preparation of lesson plans is an essential prerequisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

*GENERAL CONSIDERATIONS*

h ) The student - instructor should complete flight training in order to practice the principles of basic instruction at the SPL or BPL level. During this training the student instructor occupies the seat normally occupied by the FI ;

i ) The instructor providing this instructor training is normally taking over the role of the student - pilot. In the case of the course for the FI( B ) an additional person holding a BPL or LAPL( B ) licence or a student pilot for these licences may be on board in order to function as a student - pilot under the supervision of the instructor ;

j ) It is to be noted that airmanship is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at the appropriate times during each flight ;

k ) The student - instructor should learn how to identify common errors and how to correct them properly, which should be emphasized at all times.

*SYLLABUS of FLIGHT INSTRUCTION CONTENTS*

**A. SAILPLANES**

***LONG BRIEFINGS and AIR EXERCISES***

***Note :*** *although the fully developed spin in Exercise 10 is not required for the LAPL course, it is a requirement for the FI course.*

**EXERCISE 1 : *FAMILIARISATION with the SAILPLANE***

*a ) Objective :*

To advise the student - instructor on how to familiarize the student with the sailplane which will be used for the training and to test his / her position in the sailplane for comfort, visibility, and ability to use all controls and equipment ;

*b ) Briefing and Exercise :*

The student - Instructor has to :

1 ) present the type of sailplane which will be used ;

2 ) explain the cockpit layout : instruments and equipment ;

3 ) explain the flight controls : stick, pedals, airbrakes, flaps, cable release, undercarriage ;

4 ) check the position of the student on the seat for comfort, visibility, ability to use all controls ;

5 ) explain the use of the harness ;

6 ) demonstrate how to adjust the rudder pedal ;

7 ) explain the differences when occupying the instructor’s position ;

8 ) explain all checklists, drills, controls.

**EXERCISE 2 : *PROCEDURE in the EVENT of EMERGENCIES***

*a ) Objective :*

To advise the student - instructor on how to familiarize the student with the use of the parachute and how to explain the bailout procedure in case of emergency.

*b ) Briefing and Exercise :*

The student - instructor has to :

1 ) explain how to handle the parachute with care (transport, storage and drying after use) ;

2 ) demonstrate the adjustment of the parachute harness ;

3 ) explain the bail out procedure (especially from a sailplane in unusual attitude);

4 ) explain the procedure for landing with a parachute in normal conditions and with a strong wind.

**EXERCISE 3 : *PREPARATION for FLIGHT***

*a ) Objective :*

To advise the student - instructor on how to explain all the operations to be completed prior to flight. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the need for a pre-flight briefing ;

2 ) the structure and the content of this briefing ;

3 ) which documents are required on board ;

4 ) which equipment are required for a flight ;

5 ) how to handle the sailplane on the ground, how to move it, how to tow it out and how to park it;

6 ) how to do the pre-flight external and internal checks ;

7 ) the procedure for verifying in-limits mass and balance ;

8 ) the pre-launch checks ( checklist ).

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1 ) the need for a pre-flight briefing ;

2 ) that the reqaired documents are on board ;

3 ) that the equipment required for the intended flight is on board ;

4 ) how to handle the sailplane on the ground, move it to the start position, tow it out and park it ;

5 ) how to perform a pre-flight external and internal check ;

6 ) how to verify in-limits mass and balance ;

7 ) how to adjust harness as well as seat or rudder pedals ;

8 ) the pre-launch checks;

9 ) how to advise the student pilot in performing the pre-flight preparation;

10 ) how to analyse and correct pre-flight preparation errors as necessary.

**EXERCISE 4 : *INITIAL AIR EXPERIENCE***

*a ) Objective :*

To advise the student - instructor on how to familiarize the student with being in the air, with the area around the airfield, to note his / her reactions in this situation, and to draw his / her attention to safety and look-out procedures.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the area around the airfield ;

2 ) the need for looking out ;

3 ) the change of aircraft control.

*c ) Air Exercise :*

The student - instructor has to :

1 ) show the noteworthy references on the ground ;

2 ) analyze the reactions of the student ;

3 ) check that the student looks out (safety).

**EXERCISE 5 : *PRIMARY EFECTS of CONTROLS***

*a ) Objective :*

To advise the student - instructor on how to :

1 ) demonstrate the primary effects of each control with the help of visual references;

2 ) train the student pilot to recognise when the sailplane is no longer in a normal attitude along one of the axes and to return to the normal attitude;

3 ) train continuous and efficient look-out during these exercises;

4 ) analyze and correct errors and student pilot mistakes as necessary.

*b ) Briefing :*

The student - instructor has to explain :

1 ) define the axes of a sailplane ;

2 ) the look-out procedures ;

3 ) the visual references along each axis ;

4 ) the primary effects of controls when laterally level ;

5 ) the relationship between attitude and speed ;

6 ) the use of flaps;

7 ) the use of airbrakes.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1 ) the visual references in flight;

2 ) the primary effect of the elevator;

3 ) the relationship between attitude and speed (inertia);

4 ) the primary effect of rudder on the rotation of the sailplane around the vertical axis;

5 ) the primary effect of ailerons on banking;

6 ) the effect of airbrakes (including changes in pitch when airbrakes are extended or retracted);

7 ) the effects of flaps (provided the sailplane has flaps) ;

8 ) the look-out procedures during all the exercises;

9 ) how to advise the student pilot to recognize the primary effects of each control;

10 ) how to analyse and correct errors as necessary.

**EXERCISE 6 : *CO - ORDINATED ROLLING to and from MODERATE ANGLES of BANK***

*a ) Objective :*

To advise the student - instructor on secondary effects of controls and on how to teach the student to coordinate ailerons and rudder in order to compensate for the adverse yaw effect. Furthermore the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the secondary effects of controls;

2 ) the adverse yaw effect;

3 ) how to compensate for the adverse yaw;

4 ) the further effect of the rudder (roll).

*c ) Air Exercise :*

The student instructor has to demonstrate :

1 ) the adverse yaw effect with a reference on ground;

2 ) the further effect of the rudder (roll);

3 ) the coordination of ruder and aileron controls to compensate for the adverse yaw effects;

4 ) rolling to and from moderate angles of bank (20 to 30 °) and returning to the straight flight;

5 ) how to advise the student pilot to coordinate ailerons and rudder;

6) how to analyze and correct errors as necessary.

**EXERCISE 7 : *STRAIGHT FLYING***

*a ) Objective :*

To advise the student - instructor on how to train the student to maintain straight flight with a constant heading without slipping and skidding. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student instructor has to:

1 ) explain how to maintain straight flight;

2 ) explain different air speed limitations;

3 ) explain the pitch stability of the sailplane;

4 ) explain the effect of trimming.

*c ) Air Exercise :*

The instructor student has to demonstrate :

1 ) maintaining straight flight ;

2 ) inherent pitch stability;

3 ) the control of the sailplane in pitch, including use of trim with visual references and speed;

4 ) how to perform the instrument monitoring;

5 ) the control of level attitude with visual references;

6 ) the control of the heading with a visual reference on the ground;

7 ) the look-out procedures during all the exercises;

8 ) how to advise the student pilot to maintain straight flight;

9 ) how to analyze and correct errors as necessary.

**EXERCISE 8 : *TURNING***

*a ) Objective :*

To advise the student - instructor on how to teach students to fly turns and circles with a moderate constant bank of about 30 ° with constant attitude (speed) and coordinated flight. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the forces on the sailplane during a turn;

2 ) the need to look out before turning;

3 ) the sequences of a turn (entry, stabilizing and exiting);

4 ) the common faults during a turn;

5 ) how to turn on to selected headings, use of compass;

6 ) the use of instruments (ball indicator or slip string) for precision.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1 ) the look-out procedure before turning;

2 ) entering a turn (correction of adverse yaw);

3 ) the stabilization of a turn (keeping the attitude and compensating the induced roll);

4 ) the exit from a turn;

5 ) the most common faults in a turn;

6 ) turns on to selected headings (use landmarks as reference);

7) use of instruments (ball indicator or slip string) for precision:

8 ) how to advise the student pilot to fly a turn or circle with a moderate bank;

9 ) how to analyse and correct errors as necessary.

**EXERCISE 9 a : *SLOW FLIGHT***

*a ) Objective :*

To advise the student - instructor on how to improve the student’s ability to recognize inadvertent flight at critically low speeds (high angle of attack) and to provide practice in maintaining the sailplane in balance while returning to normal attitude (speed). Furthermore the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the characteristics of slow flight ;

2 ) the risks of stalling.

*c ) Air Exercise :*

The student - instructor has to check that the airspace below the sailplane is free of other aircraft before starting the exercise.

The student - instructor has to demonstrate :

1 ) a controlled flight down to critically high angle of attack (slow air speed), and draw the attention of the student to the nose up attitude, reduction of noise, reduction of speed;

2 ) a return to the normal attitude (speed);

3 ) how to advise the student pilot to recognise inadvertent flight at critically low speeds;

4 ) how to provide practice in maintaining the sailplane in balance while returning to normal attitude;

5 ) how to analyze and correct errors as necessary.

**EXERCISE 9 b : *STALLING***

*a ) Objective :*

To advise the student - Instructor on how to improve the student’s ability to recognize a stall and to recover from it. This includes stall from a level flight and stalls when a wing drops. Furthermore the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the mechanism of a stall;

2 ) the effectiveness of the controls at the stall;

3 ) pre-stall symptoms, recognition and recovery;

4 ) factors affecting the stall (importance of the angle of attack and high speed stall);

5 ) effect of flaps if any on the sailplane;

6 ) the effects of unbalance at the stall safety checks;

7 ) stall symptoms, recognition and recovery;

8 ) recovery when a wing drops;

9 ) approach to stall in the approach and in the landing configurations : recognition and recovery from accelerated stalls.

*c ) Air Exercise :*

The student - instructor has to check that the airspace below the sailplane is free of other aircraft or traffic before starting the exercise.

The student - instructor has to demonstrate :

1 ) stall from a level flight;

2 ) pre-stall symptoms, recognition and recovery;

3 ) stall symptoms, recognition and recovery;

4 ) recovery when a wing drops;

5 ) approach to stall in the approach and in the landing configurations;

6 ) recognition and recovery from accelerated stalls;

7 ) stalling and recovery at the incipient stage with ‘instructor induced’ distractions ;

8 ) how to improve the student pilot’s ability to recognize a stall and to recover from it;

9 ) how to analyze and correct errors as necessary.

***Note :*** *consideration is to be given to manoeuvre limitations and references to the flight manual or equivalent document ( for example owner’s manual or pilot’s operating handbook ) in relation to mass and balance limitations.*

The safety checks should take into account the minimum safe altitude for initiating such exercises in order to ensure an adequate margin of safety for the recovery. If specific procedures for stalling or spinning exercises and for the recovery techniques are provided by the flight manual or equivalent document ( for example owner’s manual or pilot’s operating handbook ), they have to be taken into consideration. These factors are also covered in the next exercise.

**EXERCISE 10 a : *SPIN RECOGNITION and AVOIDANCE***

*a ) Objective :*

To advise the student - Instructor on how to improve the student’s ability to recognize a spin at the incipient stage and to recover from it. Furthermore, the student instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) why a sailplane spins;

2 ) how to recognize the symptoms of a spin (not to be confused with spiral dive);

3 ) what are the parameters influencing the spin;

4 ) how to recover from a spin.

*c ) Air Exercise :*

The student - instructor has to check that the airspace below the sailplane is free of other aircraft or traffic before starting the exercise.

The student - instructor has to :

1 ) demonstrate stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45 °);

2 ) make sure that the student recognizes the spin entry;

3 ) make sure that the student pilot is able to recover from the spin;

4 ) check if the student still reacts properly if the instructor induces distractions during the spin entry;

5 ) demonstrate how to analyze and correct errors as necessary.

***Note :*** *consideration of manoeuvre limitations and the need to refer to the sailplane manual and mass and balance calculations.*

**EXERCISE 10 b : *DEVELOPED SPINS : ENTRY and RECOVERY***

*a ) Objective :*

To advise the student - instructor on how to recognize a developed spin and to recover from it. Furthermore, the student instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the spin entry;

2 ) the symptoms of a real spin and the recognition and identification of spin direction;

3 ) the spin recovery;

4 ) use of controls;

5 ) effects of flaps (flap restriction applicable to type);

6 ) the effect of the CG upon spinning characteristics;

7 ) the spinning from various flight attitudes;

8 ) the sailplane limitations;

9 ) safety checks;

10 ) common errors during recovery.

c ) Air Exercise :

The student - instructor has to check that the airspace below the sailplane is free of other aircraft or traffic before starting the exercise.

The student - instructor has to demonstrate :

1 ) safety checks;

2 ) the spin entry;

3 ) the recognition and identification of the spin direction;

4 ) the spin recovery (reference to flight manual);

5 ) the use of controls;

6 ) the effects of flaps (restrictions applicable to sailplane type);

7 ) spinning and recovery from various flight attitudes;

8 ) how to improve the student pilot’s ability to recognize a spin and how to recover from it;

9 ) how to analyze and correct errors as necessary.

**EXERCISE 11 : *TAKE - OFF or LAUNCH METHODS***

***Note :*** *the student - instructor has to teach at least one of the following launch methods : winch launch, aero tow, self launch. At least three launch failure exercises should be completed.*

Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

**EXERCISE 11 a : *WINCH LAUNCH***

*a ) Objective :*

To advise the student - instructor on how to teach winch launches and on how to make sure that their student will manage an aborted launch. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the signals or communication before and during launch;

2 ) the use of the launching equipment;

3 ) the pre-take-off checks;

4 ) the procedure for into wind take-off;

5 ) the procedure for crosswind take-off;

6 ) the optimum profile of winch launch and limitations;

7 ) the launch failure procedures.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1 ) the use of the launching equipment;

2 ) the pre-take-off checks;

3 ) the into wind take-off;

4 ) the crosswind take-off;

5 ) the optimum profile of winch launch and limitations;

6 ) the procedure in case of cable break or aborted launch, launch failure procedures;

7 ) how to teach the student pilot to perform safe winch launches;

8 ) how to teach the student pilot to manage an aborted launch (different altitudes);

9 ) how to analyze and correct errors as necessary.

**EXERCISE 11 b : *AERO TOW***

*a ) Objective :*

To advise the student instructor on how to teach aero towing and on how to make sure that their student will manage an aborted launch. Furthermore, the student instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student instructor has to explain :

1 ) the signals or communication before and during launch ;

2 ) the use of the launch equipment;

3 ) the pre-take-off checks;

4 ) the procedure for into wind take-off;

5 ) the procedure for crosswind take-off;

6 ) the procedure on tow: straight flight, turning and slip stream;

7 ) the recovery from out-of-position on tow;

8 ) the procedures in case of launch failure and abandonment;

9 ) the descending procedure on tow (towing aircraft and sailplane);

10 ) the reasons for launch failures and abandonment or procedures.

*c ) Air Exercise :*

The student instructor has to demonstrate :

1 ) the signals before and during launch;

2 ) the use of the launch equipment;

3 ) the pre-take-off checks;

4 ) the procedure for into wind take-off;

5 ) the procedure for a crosswind take-off;

6 ) the procedures on tow: straight flight, turning and slip stream;

7 ) the recovery from out-of-position on tow;

8 ) the procedure in case of launch failure and abandonment;

9 ) the descending procedure on tow;

10 ) how to teach the student pilot to perform safe aero tow launches;

11) how to teach the student pilot to manage an aborted launch;

12 ) how to analyze and correct errors as necessary.

**EXERCISE 11 c : *SELF LAUNCH***

*a ) Objective :*

To advise the student instructor on how to teach launching with a self launching sailplane and on how to make sure that his / her student will manage an aborted launch. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1 ) the engine extending and retraction procedures;

2 ) the engine starting and safety precautions;

3 ) the pre-take-off checks;

4 ) the noise abatement procedures;

5 ) the checks during and after take-off; (6) the into wind take-off;

7 ) the crosswind take-off;

8 ) the procedure in case of power failure;

9 ) the procedure in case of abandoned take-off;

10 ) the maximum performance (short field and obstacle clearance) take- off;

11 ) the short take-off and soft field procedure or techniques and performance calculations.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1 ) the engine extending and retraction procedures ;

2 ) the engine starting and safety precautions;

3 ) the pre-take-off checks;

4 ) the noise abatement procedures;

5 ) the checks during and after take off;

6) the into wind take-off;

7 ) the crosswind take-off;

8 ) the power failures and procedures;

9 ) the procedure in case of abandoned take-off;

10 ) the maximum performance (short field and obstacle clearance) take- off;

11 ) the short take-off and soft field procedure or techniques and performance calculations;

12 ) how to teach the student pilot to perform safe self launches;

13 ) how to teach the student pilot to manage an aborted launch (different altitudes);

14 ) how to analyse and correct errors as necessary.

**EXERCISE 12 : *CIRCUIT APPROACH and LANDING***

*a ) Objective :*

To advise the student - instructor on how to teach their students to fly a safe circuit approach and to land the sailplane. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the procedures for rejoining the circuit;

2) the procedures for collision avoidance and the lookout techniques;

3) the pre-landing check;

4) the normal circuit procedures, downwind, base leg;

5) the effect of wind on approach and touchdown speeds ;

6) the visualisation of a reference point;

7) the approach control and use of airbrakes;

8) the use of flaps (if applicable);

9) the procedures for normal and crosswind approach and landing.

*c ) Air Exercise :*

The student instructor has to demonstrate:

1) the procedures for rejoining the circuit;

2) the procedures for collision avoidance and the look-out techniques;

3) the pre-landing check;

4) the standard circuit and contingency planning (for example running out of height);

5) the effect of wind on approach and touchdown speeds;

6) the visualization of an aiming point;

7) the approach control and use of airbrakes;

8) the use of flaps (if applicable);

9) the procedures for normal and crosswind approaches and landings;

10) how to teach the student pilot to fly a safe circuit approach;

11) how to improve the student pilot’s ability to perform a safe landing;

12) how to analyze and correct errors as necessary.

**EXERCISE 13 : *FIRST SOLO***

*a ) Objective :*

To advise the student - instructor on how to prepare their students for the first solo flight.

*b ) Briefing :*

The student - instructor has to explain :

1) the limitations of the flight (awareness of local area and restrictions);

2) the use of required equipment.

c ) Air Exercise :

The student instructor has to :

1 ) check with another or more senior instructor if the student can fly solo;

2 ) monitor the flight;

3 ) debrief the flight with the student.

**EXERCISE 14 : *ADVANCED TURNING***

*a ) Objective :*

To advise the student - instructor on how to fly steep turns or circles (45 ° banking ) at constant attitude ( speed ) and with the yaw string centred. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain ;

1) the relationship between banking and speed;

2) how to master steep turns or circles;

3) the unusual attitudes which can occur (stalling or spinning and spiral dive);

4) how to recover from these unusual attitudes.

*c ) Air Exercise :*

The student has to demonstrate :

1) steep turns (45 °) at constant speed and with the yaw string centred ;

2) common errors (slipping and skidding);

3) unusual attitudes and how to recover from them;

4) how to teach the student pilot to fly steep turns or circles;

5) how to analyse and correct errors as necessary.

**EXERCISE 15 : *SOARING TECHNIQUES***

***Note :*** *if the weather conditions during the instructor training do not allow the practical training of soaring techniques, all items of the air exercises have to be discussed and explained during a long briefing exercise only.*

**EXERCISE 15 a : *THERMALLING***

*a ) Objective :*

To advise the student - instructor on how to teach their students to recognize and detect thermals, on how to join a thermal and on how to look out, in order to avoid mid-air collisions. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the look-out procedures;

2) the detection and recognition of thermals;

3) the use of audio soaring instruments;

4) the procedure for joining a thermal and giving way;

5) how to fly in close proximity to other sailplanes;

6) how to centre in thermals;

7) how to leave thermals.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the look-out procedures;

2) the detection and recognition of thermals;

3) the use of audio soaring instruments;

4) the procedure for joining a thermal and giving way;

5) the procedure for flying in close proximity to other sailplanes;

6) the centering in thermals;

7) the procedure for leaving thermals;

8) how to improve the student pilot’s ability to recognize and detect thermals;

9) how to improve the student pilot’s ability to join a thermal and how to look out;

10) how to analyze and correct errors as necessary.

**EXERCISE 15 b : *RIDGE FLYING***

*a ) Objective :*

To advise the student - instructor on how to teach his / her students to fly safely on ridges, to control their speed, and to apply the rules in order to avoid mid-air collisions. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

b ) Briefing :

The student - instructor has to explain :

1) the look-out procedures;

2) the ridge flying rules;

3) the recognition of optimum flight path;

4) speed control.

*c ) Air Exercise :* ( if applicable during training and, if possible, at training site ).

The student - instructor has to demonstrate :

1) the look-out procedures;

2) the practical application of ridge flying rules;

3) the recognition of optimum flight path;

4) speed control;

5) how to teach the student pilot to fly safely on ridges;

6) how to analyse and correct errors as necessary.

**EXERCISE 15 c : *WAVE FLYING***

*a ) Objective :*

To advise the student - instructor on how to introduce students to wave flying and to teach them to fly safely at high altitude. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the look-out procedures;

2) the techniques to be used to accede to a wave;

3) the speed limitations with increasing height;

4) the risks of hypoxia and the use of oxygen.

c ) Air Exercise : ( if applicable during training and if possible at training site ).

The student - instructor has to demonstrate :

1) the look-out procedures;

2) the wave access techniques;

3) the speed limitations with increasing height;

4) the use of oxygen (if available);

5) how to improve the student pilot’s ability to recognize and detect waves;

6) how to teach the student pilot to fly safely in a wave;

7) how to analyze and correct errors as necessary.

**EXERCISE 16 : *OUT - LANDINGS***

***Note :*** *if the weather conditions during the instructor training do not allow the practical training of out-landing procedures ( a touring motor glider may be used ) all items of the air exercise have to be discussed and explained during a long briefing exercise only.*

Instructors may only teach the safe out-landing exercise after they have demonstrated the practical ability to do so.

*a ) Objective :*

To advise the student - instructor on how to teach students to select an out - landing field, to fly the circuit and how to master the unusual landing situation. Furthermore, the student instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the gliding range at max L/D;

2) the engine re-start procedures (only for self-launching and self- sustaining sailplanes);

3) the selection of a landing area;

4) the circuit judgement and key positions;

5) the circuit and approach procedures;

6) the actions to be done after landing.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) precision landings on the airfield;

2) the gliding range;

3) the procedures for joining, arrival and circuit at a remote aerodrome;

4) the selection of an out-landing area;

5) the procedures for circuit and approach on an out-landing field;

6) the actions to be done after landing;

The student - instructor also has to be trained :

7) how to advise the student pilot to do perform a safe out-landing;

8) how to master an unusual landing situation;

9) how to analyze and correct errors as necessary.

**EXERCISE 17 : *CROSS COUNTRY FLYING***

***Note :*** *if the weather conditions during the instructor - training do not allow a cross country training flight the items of the air exercise have to be discussed and explained during a long briefing exercise only.*

**EXERCISE 17 a : *FLIGHT PLANNING***

*a ) Objective :*

To advise the student - instructor on how plan and prepare a cross-country flight.

*b ) Briefing :*

The student - instructor has to explain :

1) the weather forecast and current situation;

2) the selection of the amount of water to be carried as a function of the weather forecast;

3) the method for selecting a task, taking into account the average speed to be expected;

4) the map selection and preparation;

5) the NOTAMs and airspace considerations;

6) the radio frequencies (if applicable);

7) the pre-flight administrative procedures;

8) the procedure for filing a flight plan where required;

9) alternate aerodromes and landing areas.

**EXERCISE 17 b : *IN - FLIGHT NAVIGATION***

*a ) Objective :*

To advise the student - instructor on how to teach performing a cross-country flight.

*b ) Briefing :*

The student - instructor has to explain :

1) how to maintain track and re-route if necessary;

2) the altimeter settings;

3) the use of radio and phraseology;

4) the in-flight planning;

5) the procedures for transiting regulated airspace or ATC liaison where required;

6) the procedure in case of uncertainty of position;

7) the procedure in case of becoming lost;

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) maintaining track and re-routing if necessary;

2) altimeter settings;

3) the use of radio and phraseology;

4) in-flight planning;

5) procedures for transiting regulated airspace or ATC liaison where required;

6) uncertainty of position procedure;

7) lost procedure;

8) use of additional equipment where required;

9) joining, arrival and circuit procedures at remote aerodrome;

10) how to teach the student pilot to perform a cross-country flight;

11) how to analyze and correct errors as necessary.

**EXERCISE 17 c : *CROSS - COUNTRY SOARING TECHNIQUES***

*a ) Objective :*

To advise the student - instructor on the techniques for an efficient cross - country flight.

*b ) Briefing :*

The student - instructor has to explain :

1) the speed to fly at maximal L/D ratio;

2) the speed to fly to maximise the cruise speed (Mc Cready theory);

3) how to select the optimal track (efficient use of cloud streets etc.);

4) how to calculate the final glide;

5) how to perform a safe out-landing.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) a cross-country flight;

2) the selection of the optimal track (efficient use of cloud streets, etc) ;

3) the use of the Mc Cready ring;

4) use of final glide computers;

5) how to reduce risk and to react to potential dangers;

6) how to plan and perform an out-landing;

7) how to teach the student pilot techniques for an efficient cross- country flight;

8) how to analyze and correct errors as necessary.

**B. BALLOONS**

*LONG BRIEFINGS and AIR EXERCISES*

**EXERCISE 1 : *FAMILIARISATION with the BALLOON***

*a ) Objective :*

To advise the student - Instructor on how to familiarize the student with the balloon which will be used for the training and to test his position in the basket for comfort, visibility, and ability to use all controls and equipment. Furthermore, the student instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing and Exercise :*

The student - instructor has to :

1) present the type of balloon which will be used;

2) explain the characteristics of the balloon;

3) explain the components, instruments and equipment;

4) explain the re-fuelling procedures (in the case of hot air balloons);

5) to familiarize the student with the balloon controls;

6) explain the differences when occupying the instructor’s position;

7) explain all checklists, drills and controls.

**EXERCISE 2 : *PREPARATION for FLIGHT***

*a ) Objective :*

To advise the student - instructor on how to explain all the operations and necessary preparation to be completed before the flight. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the need for a pre-flight briefing;

2) the structure and the content of this briefing;

3) which documents are required on board;

4) which equipment are required for a flight;

5) the use of weather forecasts or actuals;

6) the flight planning with particular regard to NOTAMs, airspace structure, sensitive areas, expected track and distance, pre-flight picture and possible landing fields;

7) the use of load calculation chart;

8) the selection of launch field with particular regard to permission, behaviour and adjacent fields.

*c ) Air Exercise :*

The student - instructor has to prepare and give a pre-flight briefing.

The student - instructor has to demonstrate :

1) that the required documents are on board;

2) that the equipment required for the intended flight is on board;

3) how to advice the student to do the pre-planning procedures for each flight;

4) how to perform a pre-launch check;

5) how to select a launch field with particular regard to permission, behaviour and adjacent fields;

6) how to teach the student pilot to perform the preparation to be completed prior to flight;

7) how to analyze and correct errors of the student pilot as necessary.

**EXERCISE 3 : *CREW and PASSENGER BRIEFING***

*a ) Objective :*

To advise the student - instructor on how to explain all the importance of correct clothing for pilot, passengers and crew and how to perform the briefing of ground- and retrieve crew and the briefing of passengers. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the correct clothing for passengers and crew;

2) the briefings for ground- and retrieve crew and passengers.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) how to advise the passengers and crew about the correct clothing;

2) the briefing of ground- and retrieve crew;

3) the briefing of passengers;

4) how to familiarize the student pilot with the different type of briefings;

5) how to analyze and correct errors of the student pilot.

**EXERCISE 4 : *ASSEMBLY and LAYOUT***

*a ) Objective :*

To advise the student - instructor on how to familiarize the student pilot with the control of the crowd and how to perform the securing of launch site. Furthermore the student - instructor has to demonstrate how to familiarize the student pilot with the correct rigging of envelope and basket, the burner test procedure ( hot air balloons ) and the pre-inflation checks. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the control of the crowd;

2) the securing of the launch site;

3) the correct rigging procedure;

4) the use of the restraint line;

5) the pre-inflation checks.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) how to control the crowd and securing of launch site;

2) the correct rigging of envelope and basket;

3) the correct use of the restraint line;

4) the burner test procedure (hot air balloons);

5) the pre-inflation checks;

6) how to teach the student pilot to perform the correct rigging;

7) how to analyse and correct assembly errors of the student pilot as necessary.

**EXERCISE 5 : *INFLATION***

*a ) Objective :*

To advise the student - instructor on how to familiarize the student pilot with the different phases of the inflation procedure, the use of restraint line and inflation fan ( hot air balloons ) and the avoidance of electrostatic discharge ( gas balloons ). Furthermore, the student -instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the different phases of the inflation procedure;

2) the crowd control and securing procedures during inflation;

3) the use of the inflation fan (hot air balloons);

4) how to avoid electronic discharge (gas balloons).

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) how to control of crowd and securing of launch site during inflation procedure;

2) the cold inflation procedure and use of restraint line and inflation fan (hot air balloons);

3) the hot inflation procedure (hot air balloons);

4) the avoidance of electrostatic discharge (gas balloons);

5) the inflation procedure (gas balloons);

6) how to teach the student pilot to perform the inflation procedures;

7) how to analyze and correct errors of the student pilot during the inflation procedure as necessary.

**EXERCISE 6 : *TAKE - OFF in DIFFERENT WIND CONDITIONS***

*a ) Objective :*

To advise the student - instructor how to explain the pre take-off checks and briefings, the preparation for controlled climb and the use of restraint equipment. Furthermore the student- instructor should be able to demonstrate the assessment of wind and obstacles, the preparation for false lift and the take - off techniques in different wind conditions. In addition to this the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the pre take-off checks and briefings;

2) the preparation for controlled climb;

3) the ‘hands off and hands on’ procedure for ground crew;

4) the assessment of lift;

5) the use of the restraint equipment ;

6) the assessment of wind and obstacles;

7) the preparation for false lift;

8) the take off techniques from sheltered and non sheltered launch fields.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) how to perform the pre take-off checks and briefings;

2) how to prepare for controlled climb;

3) how to perform the ‘hands off and hands on’ procedure for ground crew;

4) how to perform the assessment of lift without endangering the ground crew;

5) how to use the restraint equipment;

6) how to perform the assessment of wind and obstacles;

7) how to prepare for false lift;

8) how to teach the student pilot the correct take off techniques from sheltered and non sheltered launch fields;

9) how to analyze and correct errors of the student pilot as necessary ;

**EXERCISE 7 : *CLIMB to LEVEL FLIGHT***

*a ) Objective :*

To advise the student -instructor on how to explain and demonstrate the climb to flight level. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the climbing with a predetermined rate of climb;

2) the effect on envelope temperature (hot air balloons);

3) the maximum rate of climb according to manufacturer’s flight manual;

4) how to level off at selected altitude.

*c ) Air Exercise :*

The student instructor has to demonstrate:

1) how to climb with a predetermined rate of climb;

2) how to perform look out techniques;

3) the effect on envelope temperature (hot air balloons);

4) the maximum rate of climb according to manufacturer’s flight manual;

5) the leveling off techniques at selected altitude;

6) how to advise the student pilot to perform the climb to level flight;

7) how to analyze and correct faults or errors of the student pilot during the climb.

**EXERCISE 8 : *LEVEL FLIGHT***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate level flight. Furthermore the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) how to maintain level flight by use of instruments;

2) how to maintain level flight by use of visual references;

3) how to maintain level flight by use of all available means;

4) the use of parachute;

5) the use of turning vents if installed (hot air balloons).

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) how to maintain level flight by use of instruments;

2) how to maintain level flight by use of visual references;

3) how to maintain level flight by use of all available means;

4) the use of parachute;

5) the use of turning vents if installed (hot air balloons);

6) how to advise the student pilot to perform the level flight;

7) how to analyse and correct faults or errors of the student pilot during the level flight.

**EXERCISE 9 : *DESCENT to LEVEL FLIGHT***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the descent to a certain flight level. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) how to descent with a predetermined rate of descent;

2) a fast descent;

3) the maximum rate of descent according to manufacturer’s flight manual;

4) the use of parachute;

5) a parachute stall and cold descent (hot air balloons);

6) the leveling off technique at selected altitude.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) a descent with a predetermined rate of descent;

2) how to perform look out techniques;

3) a fast descent;

4) the maximum rate of descent according to manufacturer’s flight manual;

5) the use of parachute ;

6) how to level off at selected altitudes;

7) how to advise the student pilot to perform a descent to a certain flight level;

8) how to analyse and correct faults or errors of the student pilot during the descent.

**EXERCISE 10 : *EMERGENCIES***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the different emergency situations and how to react. Furthermore, the student - instructor should learn how to identify student errors during the simulated emergency exercises and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the pilot light failure (hot air balloons);

2) burner failures, valve leaks, flame out and re-light (hot air balloons);

3) gas leaks;

4) closed appendix during take-off and climb (gas balloons);

5) the envelope over temperature (hot air balloons);

6) envelope damage in flight;

7) the parachute or rapid deflation system failure;

8) fire on ground and in the air;

9) how to avoid an obstacle contact including contact with electrical power lines;

10) escape drills, location and use of emergency equipment.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) a pilot light failure (hot air balloons);

2) a burner failure, valve leaks, flame out and re-light (hot air balloons);

3) gas leaks;

4) a closed appendix during take-off and climb (gas balloons);

5) envelope over temperature (hot air balloons);

6) envelope damage in flight;

7) parachute or rapid deflation system failure;

8) a fire on ground and in the air;

9) the escape drills, location and use of emergency equipment;

10) how to advise the student pilot in performing the different emergency drills;

11) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 11 : *NAVIGATION***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the advanced navigational flight preparation. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the maps selection;

2) the plotting of the expected track;

3) the marking of positions and time;

4) the calculation of distance and speed;

5) the calculation of fuel consumption (hot air balloons);

6) the calculation of ballast consumption (gas balloons);

7) the ceiling limitations (ATC or weather);

8) how to plan ahead;

9) the monitoring of weather development;

10) the monitoring of fuel or ballast consumption;

11) ATC liaison (if applicable);

12) the communication with retrieve crew;

13) the use of GNSS.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the use of selected maps;

2) the plotting of the expected track;

3) the marking of positions and time;

4) how to monitor of distance and speed;

5) how to monitor the fuel or ballast consumption;

6) the observance of ceiling limitations (ATC or weather);

7) the planning ahead;

8) the monitoring of weather development;

9) the monitoring of envelope temperature (hot air balloons);

10) ATC liaison (if applicable);

11) communication with retrieve crew;

12) use of GNSS;

13) how to advise the student pilot in performing the navigational preparation;

14) how to advise the student pilot in performing the different navigational in-flight tasks;

15) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 12 a : *FUEL MANAGEMENT HOT AIR BALLOONS***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the fuel management techniques. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the cylinder arrangement and the burner systems;

2) the function of the pilot light supply (vapour or liquid);

3) the use of master cylinders (if applicable);

4) the fuel requirement and expected fuel consumption;

5) the fuel state and pressure;

6) the minimum fuel reserves;

7) cylinder contents gauge and change procedure;

8) the use of cylinder manifolds.

*c ) Air Exercise :*

The student instructor has to demonstrate:

1) the cylinder arrangement and burner systems;

2) the pilot light supply ( vapour or liquid);

3) the use of master cylinders (if applicable);

4) how to monitor of fuel requirement and expected fuel consumption;

5) the monitoring of fuel state and pressure;

6) the monitoring of fuel reserves;

7) the use of cylinder contents gauge and change procedure;

8) the use of cylinder manifolds;

9) how to advise the student pilot to perform the fuel management;

10) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 12 b : *BALLAST MANAGEMENT GAS BALLOONS***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the ballast management. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the minimum ballast;

2) the arrangement and securing of ballast;

3) the ballast requirement and expected ballast consumption;

4) the ballast reserves.

*c ) Air Exercise :*

The student - instructor also has to demonstrate :

1) the arrangement of minimum ballast;

2) the arrangement and securing of ballast;

3) the ballast requirement calculation and expected ballast consumption;

4) how to secure ballast reserves;

5) how to advise the student pilot to perform the ballast management;

6) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 13 : *APPROACH from LOW LEVEL***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the approach from level. Furthermore, the student instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the pre landing checks;

2) passenger pre-landing briefing;

3) the selection of field;

4) the use of burner and parachute (hot air balloons);

5) the use of ballast or parachute and valve (gas balloons);

6) the use of trail rope (if applicable) (gas balloons);

7) the look-out;

8) missed approach and fly on procedures.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the use of the pre landing checks;

2) the selection of fields;

3) the use of burner and parachute (hot air balloons);

4) the use of ballast or parachute and valve (gas balloons);

5) the use of trail rope (if applicable) (gas balloons);

6) the look out procedures and how to avoid possible distractions;

7) the missed approach and fly on techniques;

8) how to advise the student pilot to perform an approach from low level;

9) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 14 : *APPROACH from HIGH LEVEL***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the approach from high level. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the pre-landing checks;

2) passenger pre-landing briefing;

3) the selection of field;

4) the rate of descent;

5) the use of burner and parachute (hot air balloons);

6) the use of ballast and parachute (gas balloons);

7) the use of trail rope (if applicable) (gas balloons);

8) the look-out;

9) the missed approach and fly on procedures.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the pre-landing checks;

2) the selection of field;

3) the rate of descent;

4) the use of burner and parachute (hot air balloons);

5) the use of ballast and parachute (gas balloons);

6) the use of trail rope (if applicable) (gas balloons);

7) the look out procedures and how to avoid potential distraction;

8) the missed approach and fly on techniques;

9) how to advise the student pilot to perform an approach from a higher level;

10) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 15 : *OPERATING at LOW LEVEL***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the operation at a low height. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the use of burner and parachute (hot air balloons);

2) the use of ballast and parachute (gas balloons);

3) the look out;

4) how to avoid a contact with low level obstacles;

5) how to avoid sensitive areas (for example nature protection areas);

6) landowner relations.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the use of burner and parachute (hot air balloons);

2) the use of ballast and parachute (gas balloons);

3) the look out procedures and how to avoid potential distraction;

4) how to avoid low level obstacles;

5) good landowner relations;

6) how to advise the student pilot to operate the balloon at a low level;

7) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 16 : *LANDING in DIFFERENT WIND CONDITIONS***

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate landings in different wind conditions. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the correct actions for turbulences during the approach or landing;

2) the passenger pre-landing briefing;

3) the use of burner and pilot lights (hot air balloons);

4) the use of ballast, parachute, valve and rip panel (gas balloons);

5) the use of parachute and turning vents (if applicable);

6) the look out;

7) the landing, dragging and deflation;

8) landowner relations.

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the pre-landing checks;

2) the passenger briefing;

3) the selection of field;

4) the effect of turbulence;

5) the use of burner and pilot lights (hot air balloons);

6) the use of ballast, parachute, valve and rip panel (gas balloons);

7) the use of parachute and turning vents (if applicable);

8) the look out procedures and how to avoid potential distraction;

9) the landing, dragging and deflation procedures;

10) how to advise the student pilot to perform a safe landing in different wind conditions;

11) how to analyse and correct faults or errors of the student pilot.

**EXERCISE 17 : *FIRST SOLO***

*a ) Objective :*

To advise the student - instructor on how to prepare their students for the first solo flight.

*b ) Briefing :*

The student - instructor has to explain :

1) the limitations of the flight;

2) the use of required equipment.

*c ) Air Exercise :*

The student - instructor has to :

1) check with another or more senior instructor if the student can fly solo;

2) monitor the pre-flight preparation;

3) brief the student (expected flight time or emergency actions);

4) monitor the flight as far as possible;

5) debrief the flight with the student.

**EXERCISE 18 : *TETHERED FLIGHT HOT AIR BALLOONS*** *( if tethered flight*

*instructional qualification is required )*

*a ) Objective :*

To advise the student -instructor on how to explain and demonstrate the tethering techniques. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the ground preparations;

2) the weather suitability;

3) the tethering techniques and equipment;

4) the maximum all-up-weight limitation;

5) the crowd control;

6) the pre take-off checks and briefings;

7) the heating for controlled lift off;

8) the ‘hands off and hands on’ procedure for ground crew;

9) the assessment of wind and obstacles;

10) the controlled climb to a pre-defined altitude (at least 60 ft).

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the ground preparations;

2) the tethering techniques;

3) the reason for maximum all-up-weight limitation;

4) how to perform the crowd control;

5) the pre take-off checks and briefings;

6) the heating for controlled lift off;

7) the ‘hands off and hands on’ procedure for ground crew;

8) the assessment of wind and obstacles;

9) the controlled climb;

10) the landing techniques;

11) how to advise the student pilot to perform a tethered flight;

12) how to analyze and correct faults or errors of the student pilot.

**EXERCISE 19 : *NIGHT FLYING***  *( if night instructional qualification required )*

*a ) Objective :*

To advise the student - instructor on how to explain and demonstrate the night flying techniques. Furthermore, the student - instructor should learn how to identify student errors and how to correct them properly.

*b ) Briefing :*

The student - instructor has to explain :

1) the medical or physiological aspects of night vision;

2) the use of lights for assembly, layout and inflation;

3) the requirement for torch to be carried, (pre-flight inspection, etc.);

4) the use of the external- and instrument lights;

5) the night take-off procedure;

6) the checklist procedures at night;

7) the emergency procedures at night;

8) the navigation principles at night;

9) map marking for night use (highlighting built up or lit areas with thicker lines, etc.).

*c ) Air Exercise :*

The student - instructor has to demonstrate :

1) the use of lights for assembly, layout and inflation;

2) the use of torch for pre-flight inspection;

3) the use of external- and instrument lights;

4) the night take-off procedure;

(5) how to perform the checklist procedures at night;

6) simulated night emergency procedures;

7) night cross country techniques, as appropriate;

8) how to advise the student pilot to perform a flight at night;

9) how to analyse and correct faults or errors of the student pilot.

***AMC 1.* FCL. 940. FI ( a )( 2 ) FI — Revalidation and Renewal**

*FI or IRI REFRESHER SEMINAR*

a ) FI or IRI Refresher Seminars made available in Member States should have due regard to geographical location, numbers attending, and periodicity throughout the territory of the Member State concerned ;

b ) Such Seminars should run for *at least* ***2*** *days*, and attendance from participants will be required for the whole duration of the seminar including breakout groups and workshops. Different aspects, such as inclusion of participants holding certificates in other categories of aircraft should be considered ;

c ) Some experienced FIs or IRIs currently involved with flying training and with a practical understanding of the revalidation requirements and current instructional techniques should be included as speakers at these seminars ;

d ) The attendance form will be completed and signed by the organizer of the seminar as approved by the competent authority, following attendance and satisfactory participation by the FI or IRI ;

e ) The content of the FI or IRI Refresher Seminar should be selected from the following :

1 ) new or current rules or regulations, with emphasis on knowledge of Part - FCL and operational requirements ;

2 ) teaching and learning ;

3 ) instructional techniques ;

4 ) the role of the instructor ;

5 ) national regulations *( as applicable )* ;

6 ) human factors ;

7 ) flight safety, incident and accident prevention ;

8 ) airmanship ;

9 ) legal aspects and enforcement procedures ;

10 ) navigational skills, including new or current radio navigation aids ;

11 ) teaching instrument flying ;

12 ) weather related topics including methods of distribution ;

13 ) any additional topic selected by the competent authority.

f ) Formal sessions should allow for a presentation time of 45 minutes, with 15 minutes for questions. The use of visual aids is recommended, with interactive video and other teaching aids *( where available )* for breakout groups and workshops.

***GM 1.* FCL. 940. FI ( a )( 2 ) FI — Revalidation and Renewal**

***FI*** *CERTIFICATE : REVALIDATION and RENEWAL FORM*

**A. AEROPLANES**

**B. HELICOPTERS**

**C. AIRSHIPS**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **INSTRUCTIONAL FLYING EXPERIENCE** | | | | | | | | | | |
| *Instructors applying for revalidation of the FI Certificate should enter the instructional hours flown during the preceding* ***36*** *months ( tick appropriate aircraft type ) :*  Aeroplanes Helicopters Airships | | | | | | | | | | |
| **SINGLE - ENGINE** | | | | | **MULTI - ENGINE** | | | | | **INSTRUMENT** |
| ***DAY*** | | ***NIGHT*** | | | ***DAY*** | | | ***NIGHT*** | |  |
| Total instructional hours & Take-offs *( preceding* ***36***  *months )* : | | | | | | | | | **/** | |
| Total instructional hours & Take-offs *( preceding* ***12***  *months )* : | | | | | | | | | **/** | |
| **FI - FLIGHT INSTRUCTOR REFRESHER SEMINAR** | | | | | | | | | | |
| **1.** | **This is to certify that the undersigned attended an FI Seminar** | | | | | | | | | |
| **2.** | **Attendee’s personal particulars :** | | | | | | | | | |
| *Name(s) :* | | | | | | | *Address:* | | | |
| *Licence N 0 :* | | | | | | | *Expiration date of FI ( ) Certificate* | | | |
| **3.** | **Seminar particulars :** | | | | | | | | | |
| *Date(s) of Seminar :* | | | | | | | *Place :* | | | |
| **4.** | **Declaration by the responsible organizer :** | | | | | | | | | |
| *I certify that the above data are correct and that the FI Seminar was carried out.* | | | | | | | | | | |
| *Date of approval :* | | | | | | *Name(s) of organizer :*  *( capital letters )* | | | | |
| *Date and place :* | | | | | | *Signature :* | | | | |
| **5.** | **Declaration by the attendee :** | | | | | | | | | |
| *I confirm the data under 1 through 3* | | | | | | | | | | |
| *Attendee’s signature :* | | |  | | | | | | | |
| **PROFICIENCY CHECK** | | | | | | | | | | |
| *\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_*  *( Name(s) of applicant ) has given proof of flying instructional ability during a Proficiency Check flight. This was done to the required standard.* | | | | | | | | | | |
| *Flying time :* | | | |  | | | | | | |
| *Aircraft or FFS used :*  **A H As** | | | | | | | | | | |
| *Main exercise :* | | | |  | | | | | | |
| *Name(s) of FIE :* | | | |  | | | | | | |
| *Licence N 0 :* | | | |  | | | | | | |
| *Date and place :* | | | |  | | | | | | |
| *Signature :* | | | |  | | | | | | |
|  | | | | | | | | | | |

**D. SAILPLANES**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **INSTRUCTIONAL FLYING EXPERIENCE** | | | | | | | | |
| *Instructors applying for revalidation of the FI Certificate should enter the instructional hours flown during the preceding* ***36*** *months.* | | | | | | | | |
| **SAILPLANE**  *( hours and take-offs )* | | | | | | **TMG** *( hours and take-offs )* | | |
| ***DAY*** | | ***NIGHT*** | | | | ***DAY*** | | ***NIGHT*** |
| Total instructional hours & Take-offs *( preceding* ***36***  *months )* : | | | | | | | **/** | |
| Total instructional hours & Take-offs *( preceding* ***12***  *months )* : | | | | | | | **/** | |
| **FI - FLIGHT INSTRUCTOR REFRESHER SEMINAR** | | | | | | | | |
| **1.** | **This is to certify that the undersigned attended an FI Seminar** | | | | | | | |
| **2.** | **Attendee’s personal particulars :** | | | | | | | |
| *Name(s) :* | | | | | | *Address:* | | |
| *Licence N 0 :* | | | | | | *Expiration date of FI ( S ) Certificate* | | |
| **3.** | **Seminar particulars :** | | | | | | | |
| *Date(s) of Seminar :* | | | | | | *Place :* | | |
| **4.** | **Declaration by the responsible organizer :** | | | | | | | |
| *I certify that the above data are correct and that the FI Seminar was carried out.* | | | | | | | | |
| *Date of approval :* | | | | | *Name(s) of organizer :*  *( capital letters )* | | | |
| *Date and place :* | | | | | *Signature :* | | | |
| **5.** | **Declaration by the attendee :** | | | | | | | |
| *I confirm the data under 1 through 3* | | | | | | | | |
| *Attendee’s signature :* | | |  | | | | | |
| **PROFICIENCY CHECK** | | | | | | | | |
| *\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_*  *( Name(s) of applicant ) has given proof of flying instructional ability during a Proficiency Check flight. This was done to the required standard.* | | | | | | | | |
| *Flying time :* | | | |  | | | | |
| *Sailplane or TMG used :* | | | | | | | | |
| *Main exercise :* | | | |  | | | | |
| *Name(s) of FIE :* | | | |  | | | | |
| *Licence N 0 :* | | | |  | | | | |
| *Date and place :* | | | |  | | | | |
| *Signature :* | | | |  | | | | |
|  | | | | | | | | |

**E. BALLOONS**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **INSTRUCTIONAL FLYING EXPERIENCE** | | | | | | | | | | |
| *Instructors applying for revalidation of the FI Certificate should enter the instructional hours flown during the preceding* ***36*** *months ( tick appropriate aircraft type ) :* | | | | | | | | | | |
| **BALLOONS** *( gas )* | | | | **BALLOONS** *( hot - air )* | | | | **HOT - AIR AIRSHIPS** | | |
| ***DAY*** | | ***NIGHT*** | | ***DAY*** | | | ***NIGHT*** | ***DAY*** | | ***NIGHT*** |
| Total instructional hours & Take-offs *( preceding* ***36***  *months )* : | | | | | | | | | **/** | |
| Total instructional hours & Take-offs *( preceding* ***12***  *months )* : | | | | | | | | | **/** | |
| **FI - FLIGHT INSTRUCTOR REFRESHER SEMINAR** | | | | | | | | | | |
| **1.** | **This is to certify that the undersigned attended an FI Seminar** | | | | | | | | | |
| **2.** | **Attendee’s personal particulars :** | | | | | | | | | |
| *Name(s) :* | | | | | | | *Address:* | | | |
| *Licence N 0 :* | | | | | | | *Expiration date of FI ( B ) Certificate* | | | |
| **3.** | **Seminar particulars :** | | | | | | | | | |
| *Date(s) of Seminar :* | | | | | | | *Place :* | | | |
| **4.** | **Declaration by the responsible organizer :** | | | | | | | | | |
| *I certify that the above data are correct and that the FI Seminar was carried out.* | | | | | | | | | | |
| *Date of approval :* | | | | | | *Name(s) of organizer :*  *( capital letters )* | | | | |
| *Date and place :* | | | | | | *Signature :* | | | | |
| **5.** | **Declaration by the attendee :** | | | | | | | | | |
| *I confirm the data under 1 through 3* | | | | | | | | | | |
| *Attendee’s signature :* | | |  | | | | | | | |
| **PROFICIENCY CHECK** | | | | | | | | | | |
| *\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_*  *( Name(s) of applicant ) has given proof of flying instructional ability during a Proficiency Check flight. This was done to the required standard.* | | | | | | | | | | |
| *Flying time :* | | | | |  | | | | | |
| Balloon or Hot - air Airship used : | | | | | | | | | | |
| *Main exercise :* | | | | |  | | | | | |
| *Name(s) of FIE :* | | | | |  | | | | | |
| *Licence N 0 :* | | | | |  | | | | | |
| *Date and place :* | | | | |  | | | | | |
| *Signature :* | | | | |  | | | | | |
|  | | | | | | | | | | |

*INTENTIONALLY LEFT BLANK*