



## **Flight Instructor Rating (Airplane) (FI (A)) Course**

### **COURSE OBJECTIVE**

The aim of this course is to give adequate training to the applicant in theoretical knowledge instruction and flight instruction in order to instruct for a PPL(A), a CPL(A), a single-engine class or type rating and, if applicable, a night qualification.

### **JCAR FCL 1 Requirements**

#### **1. Pre-request.**

- (a) At least CPL or completed at least 200 Hrs of flight time of which 150 Hrs pilot-in-command if holding a PPL
- (b) If PPL shall met the knowledge requirements for a CPL(A) JCAR-CPL theoretical knowledge
- (c) At least 30 Hrs on single- engine piston powered airplanes, of which
- (d) At least 5 Hrs shall have been completed during the six months preceding the pre-entry flight test set
- (e) Received at least 10 Hrs instrument flight instruction, of which At least 20 Hrs of cross- country flight as PIC
- (f) Passed a specific pre-entry flight test

#### **2. Theoretical training.** Complete flight instructor theoretical knowledge instruction course at least (125) Hrs

#### **3. Flight instruction.** Complete flight instructor course at least 30 Hrs that shall includes At least 25 hour dual flight instruction of which 5 Hrs may by conducted on FNPT II or FS, 5 Hrs may be mutual flight

#### **4. Flight Instructor Rating skill test**



## PART I

### TEACHING AND LEARNING

#### Item No.

1. **The Learning Process.**
  - Motivation.
  - Perception and understanding.
  - Memory and its application.
  - Habits and transfer.
  - Obstacles to learning.
  - Incentives to learning
  - Learning methods.
  - Rates of learning.
  
2. **The Teaching Process.**
  - Elements of effective teaching.
  - Planning of instructional activity.
  - Teaching methods.
  - Teaching from the 'known' to the unknown.
  - Use of lesson plans.
  
3. **Training Philosophies.**
  - Value of a structured (approved) course of training.
  - Importance of a planned syllabus.
  - Integration of theoretical knowledge and flight instruction.
  
4. **Techniques of Applied Instruction.**
  - a. **Theoretical knowledge** - Classroom instruction techniques
    - Use of training aids.
    - Group lectures.
    - Individual briefings.
    - Student participation/discussion.
  
  - b. **Flight** - Airborne instruction techniques
    - The flight/cockpit environment.
    - Techniques of applied instruction.
    - Post-flight and in flight judgment and decision making.



**5. Student Evaluation and Testing.**

**a. Assessment of student performance**

- The function of progress tests.
- Recall of knowledge.
- Translation of knowledge into understanding.
- Development of understanding into actions.
- The need to evaluate rate of progress.

**b. Analysis of student errors**

- Establish the reason for errors.
- Tackle major faults first, minor faults second.
- Avoidance of over criticism.
- The need for clear concise communication.

**6. Training Program Development.**

- Lesson planning.
- Preparation.
- Explanation and demonstration.
- Student participation and practice.
- Evaluation.

**7. Human Performance and Limitations Relevant to Flight Instruction.**

- Physiological factors
- Psychological factors.
- Human information processing.
- Behavioral attitudes.
- Development of judgment and decision making.

**8. Hazards Involved in Simulating Systems Failures and Malfunctions in the Airplane During Flight**

- Selection of a safe altitude.
- Importance of touch drills'.
- Situational awareness.
- Adherence to correct procedures.



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**9. Night Flying Instruction**

- Objectives.
- Legislation requirements.
- Airplane equipment.
- Airplane lights.
- Flight crew licenses.
- Aerodrome licenses (if applicable).
- Night familiarization.
- Preparation for flight.
- Equipment required for flight.
- Night vision accommodation.
- Personal safety precautions in the parking areas.
- External/internal checks - night considerations.
- Airplane lights – operation.

**10. Training Administration**

- Flight/theoretical knowledge instruction records.
- Pilot's personal flying log book.
- The flight/ground curriculum.
- Study material.
- Official forms.
- Aircraft Flight/Owner's Manuals/Pilot's Operating Handbooks.
- Flight authorization papers.
- Aircraft documents.
- The private pilot's license regulations.



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**Suggested Approximate Breakdown of Hours for the Theoretical Knowledge Instruction Section of the Flight Instructor (Airplane) Course**

(The item numbers shown below relate to the item numbers of 'Teaching and learning' above.)

Item No.	Tuition Hours	Practice Hours on class	Comment	Progress Test
1	2.00	-	Allow for questions and short discussion periods	0:30
2	4.00	-	The tuition time should allow for questions and short discussion periods	1:00
3	2.00	-	The PPL training syllabus should be used as reference material	0:30
4 a.	5.00	32	The time spent in practice under this item will involve the applicants refreshing their technical knowledge, and developing their classroom instruction techniques. It will also include discussion between applicants and advice on teaching from the supervising instructor	
4.b.	4.00	32	The time spent in practice will be mainly directed to the giving of pre-flight briefings. It will allow the applicants to develop their ability to give a practical and short briefing (10–15 minutes) to a student pilot. The briefing will outline in a logical sequence the flight lesson to be undertaken	
5.a.	2.00	-	Emphasis should be placed on the validity of questions used in progress tests	1:00
5.b.	2.00	-	Emphasis should be placed on the need to give encouragement to the student	1:00
6	5.00	14	The time spent in practice will be directed towards the planning of classroom lesson periods and the development of the applicants' ability to construct lesson plans	
7	5.00	-	Scenarios relevant to good judgment and decision making should be set and analyzed.	1:00
8	2.00	-	Examples of hazards should cover a broad range of light aircraft and types of operation and not to be confined to the aircraft used on the course	1:00
9	5.00	-	Long briefings to teach an applicant to give instruction in night flying	
10	2.00	-	General revision of relevant documents	1:00
Total	40.00	78.00		7.00

Course Total: 125 HOURS (including progress tests)



## **PART 2**

### **Air Exercises**

1. The air exercises are similar to those used for the training of PPL (A) but with additional items designed to cover the needs of a flight instructor.
2. 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:
  - The applicant's progress and ability.
  - The weather conditions affecting the flight.
  - The flight time available.
  - Instructional technique considerations.
  - The local operating environment.
3. 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**

4. 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 practised by the student during the flight. It should include how the flight will be conducted with regard to who is to fly the Airplane 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.
5. The four basic components of the briefing will be:
  - The aim.
  - Principles of Flight (briefest reference only).
  - The Air Exercise(s) (what, and how and by whom).
  - Airmanship (weather, flight safety etc.).

### **Planning Of Flight Lessons**

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



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## General Considerations

7. The student instructor should complete flight training to practise the principles of basic instruction at the PPL (A) level.
8. During this training, except when acting as a student pilot for mutual flights, the student instructor shall occupy the seat normally occupied by the FI (A).
9. 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.
10. If the privileges of the FI (A) rating are to include instruction for night flying, exercises 12 and 13 of the flight instruction syllabus should be undertaken at night in addition to by day either as part of the course or subsequent to rating issue.

## Flight Instruction Syllabus Contents

### Long Briefings and Air Exercises

- |                |   |  |
|----------------|---|--|
| - Exercise 1   | - | Familiarization with the Airplanes.            |
| - Exercise 2   | - | Preparation before and action after flight.    |
| - Exercise 3   | - | Air experience.                                |
| - Exercise 4   | - | Effects of controls.                           |
| - Exercise 5   | - | Taxiing.                                       |
| - Exercise 6   | - | Straight and level flight.                     |
| - Exercise 7   | - | Climbing.                                      |
| - Exercise 8   | - | Descending.                                    |
| - Exercise 9   | - | Turning.                                       |
| - Exercise 10A | - | Slow flight.                                   |
| - Exercise 10B | - | Stalling.                                      |
| - Exercise 11A | - | Spin recovery at the incipient stage.          |
| - Exercise 11B | - | Developed spins - entry & recovery.            |
| - Exercise 12  | - | Take-off and climb to downwind position.       |
| - Exercise 13  | - | The circuit, approach and landing.             |
| - Exercise 14  | - | First solo.                                    |
| - Exercise 15  | - | Advanced turning.                              |
| - Exercise 16  | - | Forced landing without power.                  |
| - Exercise 17  | - | Precautionary landing.                         |
| - Exercise 18A | - | Pilot navigation.                              |
| - Exercise 18B | - | Navigation at lower levels/reduced visibility. |
| - Exercise 18C | - | Radio navigation.                              |
| - Exercise 19  | - | Introduction to Instrument Flying.             |
| - Exercise 20  | - | Basic night flight.                            |

NOTE: Although exercise 11B is not required for the PPL course it is a requirement for the FI course.



## **Long Briefing Exercise I**

### Airplane Familiarization

- Objectives.
- Introduction to the Airplane.
- Explanation of the cockpit layout.
- Airplane and engine systems.
- Check lists, drills, controls.
- Differences when occupying the instructor's seat.

### Emergency Drills

Action in the event of fire in the air and on the ground - engine cabin and electrical Systems failures as applicable to type

Escape drills - location and use of emergency equipment and exits.

### Air Exercise 1

#### Familiarization with the Airplane

- Introduction to the Airplane.
- Explanation of the Cockpit Layout.
- Airplane Systems.
- Check Lists, Drills, Controls.

### Emergency Drills

Action in the Event of Fire in the Air and on the Ground –Engine / Cabin / Electrical System Failure as Applicable to Type

Escape Drills - Location and use of Emergency Equipment and Exits.





## **Long Briefing Exercise 2**

### Preparation for and Action after Flight

- Objectives.
- Flight authorisation and Airplane acceptance including technical log (if applicable) and certificate of maintenance.
- Equipment required for Flight (Maps, etc.).
- External checks.
- Internal checks.
- Student comfort, harness, seat or rudder pedal adjustment.
- Starting and Warming up Checks.
- Power Checks.
- Running Down, System Checks and Switching Off the Engine.
- Leaving the Airplane, Parking, Security and Picketing.
- Completion of Authorization Sheet and Airplane Serviceability documents.

### Air Exercise 2

#### Preparation For and Action after Flight

- Flight Authorization and Airplane Acceptance.
- Aircraft Serviceability Documents Equipment Required for Flight (Maps etc.).
- External Checks.
- Internal Checks.
- Student Comfort, Harness, Seat or Rudder Pedal Adjustment.
- Starting and Warming up Checks
- Power Checks.
- Running Down, System Checks and Switching Off the Engine.
- Leaving the Aircraft, Parking, Security and Picketing.
- Completion of Authorization Sheet and Airplane Serviceability Documents.

## **Long Briefing Exercise 3**

(Air Exercise only)

### AIR EXERCISE 3

#### Air Experience



## Long Briefing Exercise 4

### Effects of Controls

- Objectives.
- Function of Primary Controls - when Laterally Level and Banked.
- Further Effect of Ailerons and Rudder.
- Effect of Inertia.
- Effect of Airspeed.
- Effect of Slipstream.
- Effect of Power.
- Effect of Trimming Controls.
- Effect of Flaps.
- Operation of Mixture Control.
- Operation of Carburetor Heat Control.
- Operation of Cabin Heat/Ventilation Systems.
- Effect of other Controls (as applicable)
- Airmanship.

### Air Exercise 4

### Effects of Controls

- Primary Effects of Flying Controls - when Laterally Level and Banked.
- Further effects of Ailerons and Rudder.
- Effect of Airspeed.
- Effect of Slipstream.
- Effect of Power.
- Effect of Trimming Controls.
- Effect of Flaps.
- Operation of Mixture Control.
- Operation of Carburetor Heat Control.
- Operation of Cabin Heat/Ventilation Systems.
- Effect of other Controls as applicable Airmanship.



## Long Briefing Exercise 5

### Taxiing

- Objectives
- Pre-Taxiing Checks.
- Starting, Control of Speed and Stopping.
- Engine Handling.
- Control of Direction and Turning (including maneuvering in confined spaces).
- Parking Area Procedures and Precautions.
- Effects of Wind and Use of Flying Controls.
- Effects of Ground Surface.
- Freedom of Rudder Movement.
- Marshalling Signals.
- Instrument Checks.
- Airmanship and Air Traffic Control Procedures.
- Common Errors.

### Emergencies

- Steering Failure/Brake Failure.

## Air Exercise 5

### Taxiing

- Pre Taxiing Checks.
- Starting, Control of Speed and Stopping.
- Engine Handling.
- Control of Direction and Turning.
- Turning in Confined Spaces.
- Parking Area Procedures and Precautions.
- Effects of Wind and Use of Flying Control.
- Effects of Ground Surface.
- Freedom of Rudder Movement.
- Marshalling Signals.
- Instrument Checks.
- Airmanship and Air Traffic Control Procedures.

### Emergencies

- Steering Failure/Brake Failure.



## Long Briefing Exercise 6

### Straight and Level Flight

- Objectives:
- The Forces.
- Longitudinal Stability and Control in Pitch.
- Relationship of C of G to Control in Pitch.
- Lateral and Directional Stability (Control of Lateral Level and Balance).
- Attitude and Balance Control.
- Trimming.
- Power Settings and Airspeeds.
- Drag and Power Curves.
- Range and Endurance.
- Airmanship
- Common Errors.

### Air Exercise 6

#### Straight and Level

- At normal Cruising Power:
  - Attaining and Maintaining Straight and Level Flight.
  - Demonstration of Inherent Stability.
  - Control in Pitch, including use of Elevator Trim control.
  - Lateral Level, Direction and Balance, use of Rudder Trim controls as applicable.
- At Selected Airspeeds (Use of Power):
  - Effect of Drag and use of Power (Two Airspeeds for one Power Setting).
- Straight and Level in Different Airplane Configurations (Flaps, Landing Gear).
- Use of Instruments to achieve Precision Flight.
- Airmanship.



## Long Briefing Exercise 7

### Climbing

- Objectives:
- The Forces.
- Relationship between Power/Airspeed and Rate of Climb (Power Curves Maximum Rate of Climb ( $V_y$ )).
- Effect of Mass.
- Effect of Flaps.
- Engine Considerations.
- Effect of density Altitude.
- The Cruise Climb.
- Maximum Angle of Climb ( $V_x$ ).
- Airmanship.
- Common Errors.

### Air Exercise 7

### Climbing

- Entry and maintaining the normal Maximum Rate Climb.
- Leveling Off.
- Leveling Off at Selected Altitudes.
- Climbing with Flaps down.
- Recovery to normal Climb.
- En Route Climb (Cruise Climb).
- Maximum Angle of Climb.
- Use of Instruments to achieve Precision Flight.
- Airmanship.



## Long Briefing Exercise 8

### Descending

- Objectives:
- The Forces.
- Glide Descent Angle - Airspeed - Rate of Descent.
- Effect of Flaps.
- Effect of Wind.
- Effect of Mass.
- Engine Considerations.
- Power Assisted Descent - Power/Airspeed - Rate of Descent.
- The Cruise Descent.
- The Sideslip.
- Airmanship.
- Common Errors.

### Air Exercise 8

### Descending

- Entry and maintaining the Glide.
- Leveling Off.
- Leveling Off at Selected Altitudes.
- Descending with Flaps down.
- Powered Descent - Cruise Descent (inc. effect of Power/Airspeed).
- Side slipping (on suitable types).
- Use of Instrument to achieve Precision Flight.
- Airmanship.



## Long Briefing Exercise 9

### Turning

- Objectives:
- The Forces.
- Use of Controls.
- Use of Power.
- Maintenance of Attitude and Balance.
- Medium Level Turns.
- Climbing and Descending Turns.
- Slipping Turns.
- Turning onto Selected Headings.
- Use of Gyro Heading Indicator and Magnetic Compass.
- Airmanship
- Common Errors.

### Air Exercise 9

### Turning

- Entry and maintaining Medium Level Turns.
- Resuming straight flight.
- Faults in the Turn (incorrect Pitch, Bank, Balance).
- Climbing Turns.
- Descending Turns.
- Slipping Turns (on suitable types).
- Turns to Selected Headings, use of Gyro Heading Indicator and Compass.
- Use of Instruments to achieve Precision flight.
- Airmanship.

### Stall/Spin Awareness & Avoidance

Training Consists of Exercises: 10 A, 10 B and 11 A



## Long Briefing Exercise 10 A

### Slow Flight

#### Objectives:

- Airplane Handling Characteristics during Slow Flight at:
  - $V_{s1}$  &  $V_{so} + 10$  knots.
  - $V_{s1}$  &  $V_{so} + 5$  knots.
- Slow Flight During Instructor Induced Distractions.
- Effect of overshooting in configurations where application of engine power causes a strong nose-up' trim change.
- Airmanship.
- Common Errors.

### Air Exercise 10A

#### Slow Flight

- Airmanship.
- Safety Checks.
- Introduction to Slow Flight.
- Controlled Slow Flight in the Clean Configuration at:
  - $V_{s1} + 10$  knots & with Flaps Down.
  - $V_{so} + 10$  knots:
    - Straight & Level Flight.
    - Level Turns.
    - Climbing & Descending.
    - Climbing & Descending Turns.
- Controlled Slow Flight in the Clean Configuration at:
  - $V_{s1} + 5$  knots & with Flaps Down.
  - $V_{so} + 5$  knots:
    - Straight & Level Flight.
    - Level Turns.
    - Climbing & Descending.
    - Climbing & Descending Turns.
    - Descending Unbalanced' Turns at Low Airspeed – the need to maintain Balanced Flight.

Instructor Induced Distractions' during Flight at Low Airspeed - the need to Maintain Balanced Flight and a safe Airspeed.

Effect of going around in configurations where application of engine power causes a strong nose up' trim change.





## Long Briefing Exercise 10 B

### Stalling

- Objectives:
- Characteristics of the Stall.
- Angle of Attack.
- The Effectiveness of the Controls at the Stall.
- Factors Affecting the Stalling Speed:
  - Effect of Flaps/Slats/Slots.
  - Effect of Power/Mass/C of G/Load Factor.
- The Effects of Unbalance at the Stall.
- The Symptoms of the Stall.
- Stall Recognition & Recovery.
- Stalling & Recovery:
  - Without Power.
  - With Power On.
  - With Flaps Down.
- Maximum Power Climb (straight & turning flight to the point of Stall with uncompensated Yaw).
- \*Stalling & Recovery during maneuvers involving more than 1 G (accelerated stalls, including secondary stalls & recoveries).
- Recovering from Incipient Stalls in the landing and other configurations and conditions.
- Recovering at the Incipient Stage during Change of Configuration.
- Stalling and Recovery at the Incipient Stage with Instructor Induced Distractions.
- Airmanship.
- Common Errors.

\*Consideration is to be given to manoeuvre limitations and references to the Owners/Flight manual or Pilot's Operating Handbook must also be made in relation to Mass and Balance limitations. These factors must also be covered in the next exercise Spinning.

### Air Exercise 10 B

#### Stalling

- Airmanship - Safety checks.
- The symptoms of the Stall.
- Stall Recognition & Recovery.
  - Recovery without Power.
  - Recovery with Power.
  - Recovery when a Wing Drops at the Stall.
  - Stalling with Power ON & Recovery.
  - Stalling with Flap Down & Recovery.
- Maximum Power Climb (straight & turning flight) to the point of Stall with uncompensated YAW - Effect of unbalance at the stall when climbing power is being



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used.

- \*Stalling & Recovery during Maneuvers involving more than 1 G (accelerated stalls, including secondary stalls & recoveries).
- Recoveries from Incipient Stalls in the landing and other configurations & conditions.
- Recoveries at the Incipient Stage during change of Configuration.
- Instructor Induced Distractions during Stalling.

\*Consideration of manoeuvre limitations and the need to refer to the Airplane Manual and Weight (mass) & Balance calculations. These factors are to be covered in the next exercise - Spinning.



## **Long Briefing Exercise 11 A**

### Spin Recovery at the Incipient Stage

- Objectives:
- Causes, Stages, Autorotation and Characteristics of the Spin.
- Recognition and Recovery at the Incipient Stage - entered from various flight attitudes.
- Airplane Limitations.
- Airmanship.
- Common Errors.

### Air Exercise 11 A

### Spin Recovery at the Incipient Stage

- Airplane Limitations.
- Airmanship.
- Safety Checks.
- Recognition at the Incipient Stage of a Spin.
- Recoveries from Incipient Spins entered from various attitudes with the Airplane in the Clean Configuration including instructor induced distractions.



## **Long Briefing Exercise 11 B**

### Spin Recovery at the Developed Stage

- Objectives:
- The Spin Entry.
- Recognition & Identification of Spin Direction.
- The Spin Recovery.
- Use of Controls.
- Effects of Power/Flaps (flap restriction applicable to type) .
- Effect of the C of G upon spinning characteristics.
- Spinning from Various Flight Attitudes.
- Airplane Limitations.
- Airmanship - Safety Checks.
- Common Errors during Recovery.

### Air Exercise 11 B

#### Spin Recovery at the Developed Stage

- Airplane Limitations.
- Airmanship.
- Safety Checks.
  
- The Spin Entry.
- Recognition & Identification of the Spin Direction.
- The Spin Recovery (reference to Flight Manual).
  
- Use of Controls.
- Effects of Power/Flaps (restrictions applicable to Airplane type).
- Spinning & Recovery from various Flight Attitudes.



## Long Briefing Exercise 12

### Take-off and Climb to Downwind Position

- Objectives:
- Handling - Factors affecting the length of Take-off Run and Initial Climb.
- The Correct Lift off Speed, use of Elevators (Safeguarding the Nose Wheel), Rudder and Power Effect of Wind (including Crosswind Component).
- Effect of Flaps (including the Decision to Use and the Amount Permitted).
- Effect of Ground Surface and Gradient upon the Take-off Run.
- Effect of Mass, Altitude and Temperature on Take-off and climb Performance.
- Pre Take-Off Checks.
- Air Traffic Control Procedure (before Take-Off).
- Drills, during and after Take-off.
- Noise abatement procedures.
- Tail Wheel Considerations (as applicable).
- Short/Soft Field Take-Off Considerations/Procedures.

### Emergencies:

- Aborted Take-Off.
- Engine Failure after Take-Off.
- Airmanship and Air Traffic Control Procedures.
- Common Errors.

## Air Exercise 12

### Take-off and Climb To Downwind Position

- Pre Take-Off Checks.
- Into Wind Take-Off.
- Safeguarding the Nose Wheel.
- Crosswind Take-Off.
- Drills During and After Take-Off.
- Short Take-Off and Soft Field Procedure/Techniques (including Performance Calculations).
- Noise abatement procedures.
- Airmanship.



## Long Briefing Exercise 13

### The Circuit Approach and Landing

- Objectives:
- The Downwind Leg, Base Leg, Approach - Position and Drills.
- Factors Affecting the Final Approach and the Landing Run.
- Effect of Mass.
- Effects of Altitude and Temperature.
- Effect of Wind.
- Effect of Flap.
- The Landing.
  - Effect of Ground Surface and Gradient upon the Landing Run
- Types of Approach and Landing:
  - Powered.
  - Crosswind.
- Flapless (at an appropriate stage of the course).
- Glide.
- Short Field.
- Soft Field.
- Tail Wheel Airplane Considerations (as applicable).
- Missed Approach.
- Engine Handling.
- Wake Turbulence Awareness.
- Wind shears Awareness.
- Airmanship and Air Traffic Control Procedures
- Miss landing/Go around.
- Special emphasis on lookout.
- Common Errors.

### Air Exercise 13

#### The Circuit Approach and Landing

- Circuit Procedures - Downwind, Base Leg.
- Powered Approach and Landing
- Safeguarding the Nose wheel.
- Effect of Wind on Approach and Touchdown Speeds and use of Flaps.
- Crosswind Approach and Landing
- Glide Approach and Landing.
- Flapless Approach and Landing (short and soft field)
- Short field and soft field procedures
- Wheel Landing (Tail Wheel Aircraft)
- Missed Approach/Go around
- Miss landing/Go around.
- Noise abatement procedures.
- Airmanship.



## Long Briefing Exercise 14

### First Solo and Consolidation

A summary of points to be covered before sending the student on first solo

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

- Procedures for Leaving and Rejoining the Circuit.
- The Local Area (Restrictions, Controlled Airspace, etc.)
- Compass Turns.
- QDM Meaning and Use.
- Airmanship.
- Common Errors.

### Air Exercise 14

#### First Solo and Consolidation

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

- Procedures for Leaving and Rejoining the Circuit.
- The Local Area (Restrictions, Controlled Airspace, etc.).
- Compass Turns.
- Obtaining QDM's.
- Airmanship.



## Long Briefing Exercise 15

### Advanced Turning

- Objectives:
- The Forces.
- Use of Power.
- Effect of Load Factor:
  - Structural Considerations.
  - Increased Stalling Speed.
- Physiological Effects.
- Rate and Radius of Turn.
- Steep, Level, Descending and Climbing Turns.
- Stalling in the Turn.
- \*Spinning from the Turn - Recovery at the Incipient Stage.
- \*The Spiral Dive.
- Unusual Attitudes and Recoveries.
- Airmanship.
- Common Errors.

\*Considerations are to be given to manoeuvre limitations and reference to The Owner's/Flight Manual/Pilot's Operating Handbook must be made in relation to Mass and Balance, and any other restrictions for Practice Entries to the Spin.

### Air Exercise 15

#### Advanced Turning

- Level, Descending and Climbing Steep Turns.
- Stalling in the Turn.
- The Spiral Dive.
- Spinning from the Turn.
- Recovery from Unusual Attitudes.
- Maximum Rate Turns.
- Airmanship.





## Long Briefing Exercise 16

### Forced Landing without Power

- Objectives:
- Selection of forced landing areas.
- Provision for change of plan.
- Gliding distance – consideration.
- Planning the descent.
- Key positions.
- Engine failure checks.
- Use of radio - R/T Distress Procedure.
- The base leg.
- The final approach.
- Go around.
- The landing considerations.
- Actions after landing.
- Airplane security.
- Causes of engine failure.
- Airmanship.
- Common errors.

### Air Exercise 16

#### Forced Landing without Power

#### Forced Landing Procedures

- Selection of Landing Area:
  - Provision for Change of Plan.
  - Gliding Distance Considerations.
- Planning the descent:
  - Key Positions.
  - Engine Failure Checks.
  - Engine cooling precautions.
  - Use of Radio
  - The Base Leg.
  - The Final Approach.
  - The Landing . (When the Exercise is conducted at an Aerodrome)
- Actions after Landing: (When the Exercise is conducted at an Aerodrome)
  - Airplane Security.
  - Airmanship.



## Long Briefing Exercise 17

### Precautionary Landing

- Objectives:
- Occasions when necessary (In Flight Conditions):
  - Landing area Selection and Communication (R/T Procedure).
  - Overhead Inspection.
  - Simulated Approach.
  - Climb Away.
  - Landing at a Normal Aerodrome.
  - Landing at a Disused Aerodrome.
  - Landing on an Ordinary Field.
  - Circuit and Approach.
- Actions After Landing:
  - Airplane Security.
  - Airmanship.
  - Common errors.

### Air Exercise 17

### Precautionary Landing

- Occasions when necessary (In Flight Conditions):
  - Landing area selection.
  - Overhead Inspection.
  - Simulated Approach.
  - Climb Away.
  - Landing at a Normal Aerodrome.
  - Landing at a Disused Aerodrome.
  - Landing on an Ordinary Field.
  - Circuit and Approach.
- Actions After Landing:
  - Airplane Security.
  - Airmanship.



## Long Briefing Exercise 18A

Pilot Navigation

Flight Planning

- Objectives:
  - Weather Forecast and Actual(s).
  - Map Selection and Preparation:
  
- Choice of Route:
  - Regulated/Controlled Airspace.
  - Danger, Prohibited and Restricted Areas.
  - Safety Altitude.
  
- Calculations:
  - Magnetic Heading(s) and Time(s) en route.
  - Fuel Consumption.
  - Mass and Balance.
  - Mass and Performance.
  
- Flight Information:
  - NOTAMs etc.
  - Noting of Required Radio Frequencies.
  - Selection of Alternate aerodrome(s) .
  - Aircraft Documentation.
  
- Notification of the Flight:
  - Booking Out Procedure.
  - Flight Plans.
  
- Aerodrome Departure.
  
- Organization of Cockpit Workload.
  
- Departure Procedures:
  - Altimeter Settings.
  - Setting Heading Procedures.
  - Noting of ETA(s).



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- En-Route:
  - Map reading - identification of ground features
  - Maintenance of Altitudes and Headings.
  - Revisions to ETA and Heading, wind effect, drift angle and groundspeed checks.
  - Log Keeping.
  - Use of Radio (including VDF if applicable).
  - Minimum Weather Conditions for Continuance of Flight.
  - In Flight' Decisions, diversion procedures.
  - Operations in Regulated/Controlled Airspace.
  - Procedures for Entry, Transit and Departure.
  - Navigation at Minimum Level.
  - Uncertainty of Position Procedure (Including R/T procedure).
  - Lost Procedure (Including R/T procedure).
  - Use of Radio Nav. aids.
  - Arrival Procedures.
  
- Aerodrome Circuit Joining Procedures:
  - Altimeter Setting, ATC Liaison, R/T Procedure, etc.
  - Entering the Traffic Pattern (controlled/uncontrolled aerodromes).
  - Circuit Procedures.
  - Parking Procedures.
  - Security of Airplane Refueling and Booking In.

## Air Exercise 18A

### Pilot Navigation

#### Flight Planning

- Weather Forecast and Actual(s).
- Map Selection and Preparation:
  - Choice of Route.
  - Regulated/Controlled Airspace.
  - Danger, Prohibited and Restricted Areas.
  - Safety Altitude.
- Calculations:
  - Magnetic Heading(s) and Time(s) En-Route.
  - Fuel Consumption.
  - Mass and Balance.
  - Mass and Performance.



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- Flight Information:
  - NOTAMs etc.
  - Noting of Required Radio Frequencies.
  - Selection of Alternate Aerodromes.
  - Airplane Documentation.
  
- Notification of the Flight:
  - Flight clearance procedures (as applicable).
  - Flight Plans.

#### Aerodrome Departure

- Organization of Cockpit Workload.
  
- Departure Procedures:
  - Altimeter Settings.
  
- En-route:
  - Noting of ETA(s).
  - Wind effect, drift angle, ground speed checks.
  - Maintenance of Altitudes and Headings.
  - Revisions to ETA and Heading.
  - Log Keeping.
  - Use of Radio (including VDF if applicable).
  - Minimum Weather Conditions for Continuance of Flight 'In Flight' Decisions.
  - Diversion Procedure.
  - Operations in Regulated/Controlled Airspace.
  - Procedures for Entry, Transit and Departure.
  - Uncertainty of Position Procedure.
  - Lost Procedure.
  - Use of Radio Nav. aids.
  
- Arrival Procedures:
  - Aerodrome Joining Procedures.
  - Altimeter Setting, ATC Liaison, etc.
  - Entering the Traffic Pattern.
  - Circuit Procedures Parking Procedures Security of Aircraft Refueling.
  - Booking In.



## **Long Briefing Exercise 18B**

### Navigation at Lower Levels/Reduced Visibility

- Objective:
- General Considerations:
  - Planning Requirements Prior to Flight in Entry/Exit Lanes.
  - ATC Rules, Pilot Qualifications and Aircraft Equipment.
  - Entry/Exit Lanes and Areas where Specific Local Rules Apply.
- Low Level Familiarization:
  - Actions Prior to Descending.
  - Visual Impressions and Height Keeping at Low Altitude.
  - Effects of Speed and Inertia during Turns.
  - Effects of Wind and Turbulence.
- Low Level Operation:
  - Weather Considerations.
  - Low Cloud and Good Visibility.
  - Low Cloud and Poor Visibility.
  - Avoidance of Moderate to Heavy Rain Showers.
  - Effects of Precipitation.
  - Joining a Circuit.
  - Bad Weather Circuit, Approach and Landing.
- Airmanship.

### Air Exercise 18B

#### Navigation at Lower Levels

- Low Level Familiarization:
  - Entry/Exit Lanes and Areas Where Specific Local Rules Apply.
  - Actions Prior to Descending.
  - Visual Impressions and Height Keeping at Low Altitude.
  - Effects of Speed and Inertia during Turns.
  - Effects of Wind and Turbulence.
  - Hazards of operating at low levels.



- Low Level Operation:
  - Weather Considerations.
  - Low Cloud and Good Visibility.
  - Low Cloud and Poor Visibility.
  - Avoidance of Moderate to Heavy Rain Showers.
  - Effects of Precipitation (forward visibility).
  - Joining a Circuit.
  - Bad Weather Circuit, Approach and Landing.
  
- Airmanship.

## **Long Briefings 18C**

### Use of Radio Navigation Aids Under VFR

#### Objectives:

- a. Use of VHF Omni range.
  - Availability of VOR stations, AIP.
  - Signal reception range.
    - Selection and identification.
  - Radials and method of numbering.
  - Use of Omni bearing selector (OBS).
  - To-From indication and station passage.
  - Selection, interception and maintaining a radial.
  - Use of two stations to determine position.
  
- b. Use of automatic direction finding equipment (ADF).
  - Availability of NDB stations, AIP.
  - Signal reception range.
    - Selection and identification.
  - Orientation in relation to NDB.
  - Homing to an NDB.
  
- c. Use of VHF direction finding (VHF/DF).
  - Availability, AIP.
  - R/T procedures.
  - Obtaining QDMs and QTEs.



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- d. Use of radar facilities.
  - Availability and provision of service, AIS.
  - Types of service.
  - R/T procedures and use of transponder.
    - Mode selection.
    - Emergency codes.
  
- e. Use of Distance Measuring Equipment (DME).
  - Availability, AIP.
  - Operating modes.
  - Slant range.
  
- f. Use of Aero Navigation systems, satellite navigation systems (RNAV - SATNAV).
  - Availability.
  - Operating modes.
  - Limitations.

## AIR EXERCISE 18C

### Radio Navigation

- a. Use of VHF Omni Range.
  - Availability, AIP, frequencies.
  - Selection and identification.
  - Omni bearing selector (OBS).
  - To/from indications, - orientation.
  - Course deviation indicator (CDI).
  - Determination of radial.
  - Intercepting and maintaining a radial.
  - VOR passage.
  - Obtaining a fix from two VORs.
  
- b. Use of automatic direction finding equipment (ADF) non-directional beacons (NDBs).
  - Availability, AIP, frequencies.
  - Selection and identification.
  - Orientation relative to the beacon.
  - Homing
  
- c. Use of VHF direction finding (VHF/DF).
  - Availability, AIP, frequencies.
  - R/T procedures and ATC liaison.
  - Obtaining a QDM and homing.





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- d. Use of en-route/terminal radar.
  - Availability, AIP.
  - Procedures and ATC liaison.
  - Pilot's responsibilities.
  - Secondary surveillance radar.
  - Transponders.
  - Code selection.
  - Interrogation and reply.
  
- e. Use of distance measuring equipment (DME).
  - Station selection and identification.
  - Modes of operation.
  
- f. Use of Aero Navigation systems, satellite navigation systems (RNAV - SATNAV).
  - Setting up.
  - Operation.
  - Interpretation.



## Long Briefing Exercise 19

### Introduction to Instrument Flying

- Objectives:
- Flight Instruments.
- Physiological Considerations.
- Instrument Appreciation.
- Attitude Instrument Flight.
- Pitch Indications.
- Bank Indications.
- Different Dial Presentations.
- Introduction to the Use of the Attitude Indicator.
- Pitch Attitude.
- Bank Attitude.
- Maintenance of Heading and Balanced flight.
- Instrument Limitations (inc. System Failures).

### Attitude, Power & Performance, Attitude Instrument Flight:

- Control Instruments.
- Performance Instruments.
- Effect of Changing Power and configuration.
- Cross Checking the Instrument Indications.
- Instrument Interpretation.
- Direct and Indirect Indications. (Performance Instruments)
- Instrument Lag.
- Selective Radial Scan.

### The Basic Flight Maneuvers (Full Panel)

- Straight and Level Flight at Various Airspeeds and Airplane Configurations.
  - Climbing.
  - Descending.
  - Standard Rate Turns (Onto Pre-Selected Headings).
    - Level.
    - Climbing.
    - Descending.



## Air Exercise 19

### Introduction to Instrument Flying

- Physiological Sensations
- Instrument Appreciation
- Attitude Instrument Flight
- Pitch Attitude.
- Bank Attitude.
- Maintenance of Heading and Balanced Flight.
- Attitude Instrument Flight.
- Effect of Changing Power and configuration.
- Cross Checking the Instruments.
- Selective Radial Scan.

### The Basic Flight Maneuvers (Full Panel)

- Straight and Level Flight at various Airspeeds and Airplane Configurations.
  - Climbing.
  - Descending.
- Standard Rate Turns (Into Pre-Selected Headings).
  - Level.
  - Climbing.
  - Descending.



## Long Briefing Exercise 20

### Basic Night Flying

A summary of points to be covered before sending the student on a first solo at night

- Start up procedures.
- Local procedures - including ATC liaison.
- Taxiing.
  - Parking area and taxiway lighting.
  - Judgment of speed and distances.
  - Use of taxiway lights.
  - Avoidance of hazards - obstruction lighting.
  - Instrument checks.
- Holding point - lighting procedure.
- Initial familiarization at night.
- Local area orientation.
- Significance of lights on other aircraft.
- Ground obstruction lights.
- Division of piloting effort - external/instrument reference.
- Rejoining procedure.
- Aerodrome lighting - Approach and runway lighting (including VASI and PAPI).
  - Threshold lights.
  - Approach lighting.
  - Visual approach slope indicator systems.

### Night Circuits

- Take-off and climb.
  - Line up.
  - Visual references during the take-off run.
  - Transfer to instruments.
  - Establishing the initial climb.
  - Use of flight instruments.
  - Instrument climb and initial turn.
- The circuit.
  - Airplane positioning - reference to runway lighting.
  - The traffic pattern and lookout.
  - Initial approach and runway lighting demonstration.
  - Airplane positioning.
  - Changing aspect of runway lights and VASI or PAPI.
  - Intercepting the correct approach path.
  - The climb away.



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- Approach and landing.
  - Positioning, base leg and final approach.
  - Diurnal wind effect.
  - Use of landing lights.
  - The flare and touchdown.
  - The roll out.
  - Turning off the runway - control of speed.
  
- Missed approach.
  - Use of instruments.
  - Re-positioning in the circuit pattern.

#### Night Navigation

- Particular emphasis on flight planning.
- Selection of ground features visible at night.
  - Air light beacons.
  - Effect of cockpit lighting on map colors.
  - Use of radio aids.
  - Effect of moonlight upon visibility at night.
- Emphasis on maintaining a minimum safe altitude.
- Alternate aerodromes - restricted availability.
- Restricted recognition of weather deterioration.
- Lost procedures.

#### Night Emergencies

- Radio failure.
- Failure of runway lighting.
- Failure of Airplane landing lights.
- Failure of Airplane internal lighting.
- Failure of Airplane navigation lights.
- Total electrical failure.
- Abandoned take-off.
- Engine failure.
- Obstructed runway procedure.