

**SUBPART B
LEISURE PILOT LICENCE – LPL**

AMC to FCL.115 and FCL.120

SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE LEISURE PILOT LICENCE

The following tables contain the syllabi for the courses of theoretical knowledge, as well as for the theoretical knowledge examinations for the LPL. The training and examination should cover aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated to the licence and the activity.

I. COMMON SUBJECTS

(FOR BASIC LPL, LPL(A), LPL(H), LPL(S) AND LPL(B))

1.	AIR LAW AND ATC PROCEDURES
1.1.	INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS
1.2.	AIRWORTHINESS OF AIRCRAFT
1.3.	AIRCRAFT NATIONALITY AND REGISTRATION MARKS
1.4.	PERSONNEL LICENSING
1.5.	RULES OF THE AIR
1.6.	PROCEDURES FOR AIR NAVIGATION – AIRCRAFT OPERATIONS
1.7.	AIR TRAFFIC REGULATIONS – AIRSPACE STRUCTURE
1.8.	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT
1.9.	AIR TRAFFIC REGULATIONS – AIRSPACE STRUCTURE
1.10.	AERONAUTICAL INFORMATION SERVICE
1.11.	AERODROMES, EXTERNAL TAKE OFF SITES
1.12.	SEARCH AND RESCUE
1.13.	SECURITY
1.14.	ACCIDENT REPORTING
1.15.	NATIONAL LAW
2.	HUMAN PERFORMANCE
2.1.	HUMAN FACTORS: BASIC CONCEPTS
2.2.	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE
2.3.	BASIC AVIATION PSYCHOLOGY
3.	METEOROLOGY
3.1.	THE ATMOSPHERE
3.2.	WIND
3.3.	THERMODYNAMICS
3.4.	CLOUDS AND FOG
3.5.	PRECIPITATION
3.6.	AIR MASSES AND FRONTS
3.7.	19. PRESSURE SYSTEMS

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3.8.	CLIMATOLOGY
3.9.	FLIGHT HAZARDS
3.10.	METEOROLOGICAL INFORMATION
4.	COMMUNICATIONS
4.1.	VFR COMMUNICATIONS
4.2.	DEFINITIONS
4.3.	GENERAL OPERATING PROCEDURES
4.4.	RELEVANT WEATHER INFORMATION TERMS (VFR)
4.5.	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE
4.6.	DISTRESS AND URGENCY PROCEDURES
4.7.	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES

II. ADDITIONAL SUBJECTS FOR EACH CATEGORY

II.C. SAILPLANES

5.	PRINCIPLES OF FLIGHT – SAILPLANE
5.1.	AERODYNAMICS (AIRFLOW)

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5.2.	FLIGHT MECHANICS
5.3.	STABILITY
5.4.	CONTROL
5.5.	LIMITATIONS (LOAD FACTOR AND MANOEUVRES)
5.6.	STALLING AND SPINNING
6.	OPERATIONAL PROCEDURES - SAILPLANE
6.1.	GENERAL REQUIREMENTS
6.2.	LAUNCH METHODS
6.3.	SOARING TECHNIQUES
6.4.	CIRCUITS AND LANDING
6.5.	OUTLANDING
6.6.	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS)
6.7.	EMERGENCY PROCEDURES
7.	FLIGHT PERFORMANCE AND PLANNING - SAILPLANE
7.1.	VERIFYING MASS AND BALANCE
7.2.	SPEED POLAR OF SAILPLANES / CRUISING SPEED
7.3.	FLIGHT PLANNING AND TASK SETTING
7.4.	ICAO FLIGHT PLAN (ATS Flight Plan)
7.5.	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING
8.	AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, EMERGENCY EQUIPMENT
8.1.	AIRFRAME
8.2.	SYSTEM DESIGN, LOADS, STRESSES
8.3.	LANDING GEAR, WHEELS, TYRES, BRAKES
8.4.	MASS AND BALANCE
8.5.	FLIGHT CONTROLS
8.6.	INSTRUMENTS
8.7.	MANUALS AND DOCUMENTS
8.8.	AIRWORTHINESS, MAINTENANCE
9.	NAVIGATION - SAILPLANE
9.1.	BASICS OF NAVIGATION
9.2.	MAGNETISM AND COMPASSES
9.3.	CHARTS
9.4.	DEAD RECKONING NAVIGATION (DR)
9.5.	IN-FLIGHT NAVIGATION
9.6.	GLOBAL NAVIGATION SATELLITE SYSTEMS

AMC to FCL.120 and FCL.125**Theoretical knowledge examination and skill test for the LPL****1. THEORETICAL KNOWLEDGE EXAMINATION**

- 1.1 The examinations should be in written form and should comprise a total of 120 multiple choice questions covering all the subjects.
- 1.2 Communication practical classroom testing may be conducted.
- 1.3 The competent authority should inform applicants of the language(s) in which the examinations will be conducted.
- 1.4 The period of 18 months mentioned in FCL.025(b) should be counted from the end of the calendar month when the applicant first attempted an examination.

2. SKILL TEST

- 2.1 Further training may be required following any failed skill test or part thereof. There should be no limit to the number of skill tests that may be attempted.

3. CONDUCT OF THE TEST

- 3.1 If the applicant chooses to terminate a skill test for reasons considered inadequate by the flight examiner, the applicant should retake the entire skill test. If the test is terminated for reasons considered adequate by the flight examiner, only those sections not completed should be tested in a further flight.
- 3.2 Any manoeuvre or procedure of the test may be repeated once by the applicant. The flight examiner may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete retest.
- 3.3 An applicant should be required to fly the aircraft from a position where the pilot-in-command functions can be performed and to carry out the test as if there is no other crew member. Responsibility for the flight should be allocated in accordance with national regulations.

1. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board.

2. An applicant should indicate to the FE the checks and duties carried out. Checks should be completed in accordance with the flight manual and/or the authorised check list for the sailplane on which the test is being taken.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:
 - operate the sailplane within its limitations;
 - complete all manoeuvres with smoothness and accuracy;
 - exercise good judgment and airmanship;
 - apply aeronautical knowledge; and
 - maintain control of the sailplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

SECTION 1	
PRE-FLIGHT OPERATIONS AND DEPARTURE	
Use of checklist, airmanship (control of sailplane by external visual reference), lookout, apply in all sections.	
a	Pre-flight sailplane (daily) inspection, documentation and weather brief
b	Verifying in-limits mass and balance and performance calculation
c	Sailplane servicing compliance
d	Pre take-off checks
SECTION 2	
LAUNCH METHOD	
Note: At least for one of the three launch methods all the mentioned items are fully exercised during the skill test.	
SECTION 2 (A)	
WINCH OR CAR LAUNCH	
a	Signals before and during launch, including messages to winch driver
b	Adequate profile of winch launch
c	Launch failures (simulated)
d	Situational awareness
SECTION 2 (B)	
AEROTOW LAUNCH	
a	Signals before and during launch, including signals to / communications with tow plane pilot for any problems
b	Initial roll, take-off climb
c	Launch abandonment (simulation only or 'talk-through')
d	Correct positioning during straight flight and turns
e	Out of position and recovery
f	Correct release from tow

g	Lookout and airmanship through whole launch phase
SECTION 2 (C)	
SELF LAUNCH (powered sailplanes only)	
a	ATC liaison - compliance
b	Aerodrome departure procedures
c	Initial roll, take-off climb
d	Lookout and airmanship during the whole take-off
e	Simulated engine failure after take off
f	Engine shut down and stowage
SECTION 3	
GENERAL AIRWORK	
a	Maintain straight and level flight; attitude and speed control
b	Co-ordinated medium (30° bank) turns, look out procedures and collision avoidance
c	Turning on to selected headings visually and with use of compass
d	Flight at high angle of attack (critically low airspeed)
e	Clean stall and recovery
f	Spin avoidance and recovery
g	Steep (45° bank) turns, look out procedures and collision avoidance
SECTION 4	
CIRCUIT, APPROACH AND LANDING	
a	Aerodrome circuit joining procedure
b	Collision avoidance - look out procedures
c	Pre landing checks
d	Circuit, approach control, landing
e	Precision landing (simulation of out-landing - short field)
f	Cross wind landing if suitable conditions available

FLIGHT INSTRUCTION FOR THE LEISURE PILOT (SAILPLANES) AND THE SAILPLANE PILOT LICENCE (SPL)

1. ENTRY TO TRAINING

- 1.1 Before starting training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

- 2.1 The LPL (S) / SPL flight instruction syllabus should take into account the principles of threat and error management and also cover:

- (a) pre-flight operations, including verifying mass and balance, aircraft inspection and servicing;
- (b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- (c) control of the aircraft by external visual reference;
- (d) flight at high angle of attack (critically low airspeeds), recognition of, and recovery from, incipient and full stalls and spins;
- (e) flight at critically high airspeeds, recognition of, and recovery from spiral dive;
- (f) normal and crosswind take-offs in respect with the different launch methods;
- (g) normal and crosswind landings
- (h) short field landings and outlandings – field selection, circuit and landing hazards and precautions
- (i) cross-country flying using visual reference, dead reckoning and available navigation aids;
- (j) soaring techniques as appropriate to site conditions
- (k) emergency actions
- (l) compliance with air traffic services procedures and communication procedures.

- 2.2 Before allowing the applicant for a LPL(S) / SPL to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment.

3. SYLLABUS OF FLIGHT INSTRUCTION

- 3.1. 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

- Applicability of the exercises to the sailplane type
- 3.2. At the discretion of the instructors some of the exercises may be combined and some other exercises may be done in several flights.
- 3.3. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1: Familiarisation with the sailplane

- characteristics of the sailplane
- cockpit layout – instruments and equipment
- flight controls – stick, pedals, airbrakes, flaps, cable release, undercarriage
- check lists, drills, controls

Exercise 2: Procedures in the event of emergencies

- use of safety equipment (parachute)
- action in the event of system failures
- bail-out procedures

Exercise 3: Preparation for flight

- pre-flight briefings
- required documents on board
- equipment required for the intended flight
- ground handling / movements/ tow out, parking, security
- pre-flight external and internal checks
- verifying in-limits mass and balance
- harness, seat and/or rudder panel adjustments
- pre-launch checks

Exercise 4: Initial air experience

- area familiarization
- lookout procedures

Exercise 5: Effects of controls

- lookout procedures
- use of visual references
- primary effects when laterally level and when banked
- reference attitude and effect of elevator
- relationship between attitude and speed
- effects of:
 - flaps (if available)
 - airbrakes

Exercise 6: Moderate Banking and Coordination

- lookout procedures
- further effects of aileron (adverse yaw) and rudder (roll)
- coordination

- banking at moderate angle, return to level flight

Exercise 7: Straight flying

- lookout procedures
- maintaining straight flight
- flight at critically high airspeeds
- demonstration of inherent pitch stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim
- airspeed: instrument monitoring and control

Exercise 8: Turning

- lookout procedures
- demonstration and correction of adverse yaw
- entry to turn (medium level turns)
- stabilizing turns
- exiting turns
- faults in the turn (slipping / skidding)
- turns on to selected headings, use of compass
- use of instruments (ball indicator and/or slip string) for precision

Exercise 9A: Slow flight

NOTE: The objective is to improve the student's ability to recognise 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).

- safety checks
- introduction to characteristics of slow flight
- controlled flight down to critically high angle of attack (slow airspeed)

Exercise 9B: Stalling

- safety checks
- pre-stall symptoms, recognition and recovery
- stall symptoms, recognition and recovery
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations
- recognition and recovery from accelerated stalls

Exercise 10: Spin recognition and avoidance

- safety checks
- stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45°)
- Instructor induced distractions during the spin entry

OTE: Consideration of manoeuvre limitations and the need to refer to the sailplane manual and mass and balance calculations.

Exercise 11: Take-off / Launch methods

NOTE: At least one launch method must be taught containing all the subject below.

Exercise 11A: Winch launch

- signals and /or communication before and during launch
- use of the launching equipment
- pre-take-off checks
- into wind take-off
- crosswind take-off
- optimum profile of winch launch and limitations
- launch failure procedures

Exercise 11B: Aero tow

- signals and/or communication before and during launch
- use of the launch equipment
- pre-take-off checks
- into wind take-off
- crosswind take-off
- on tow - straight flight / turning / slip stream
- out of position in tow and recovery
- descending on tow (towing aircraft and sailplane)
- launch failure and abandonment

Exercise 11C: Self-launch

- engine extending and retraction procedures
- engine starting and safety precautions
- pre-take-off checks
- noise abatement procedures
- checks during and after take off
- into wind take-off
- crosswind take-off
- power failures / procedures
- abandoned take-off
- maximum performance (short field and obstacle clearance) take-off
- short take-off and soft field procedure / techniques and performance calculations

Exercise 11D: Car launch

- signals before and during launch
- use of the launch equipment
- pre-take-off checks
- into wind take-off
- crosswind take-off
- optimum launch profile and limitations

- launch failure procedures
- Exercise 11E: Bungee launch
- signals before and during launch
 - use of the launch equipment
 - pre-take-off checks
 - into wind take-off
- Exercise 12: Soaring techniques
- Exercise 12A: Thermalling
- lookout procedures
 - detection and recognition of thermals
 - use of audio soaring instruments
 - joining a thermal and giving way
 - flying in close proximity to other sailplanes
 - centring in thermals
 - leaving thermals
- Exercise 12B: Ridge flying (if applicable during training and if possible at training site)
- lookout procedures
 - practical application of ridge flying rules
 - optimisation of flight path
 - speed control
- Exercise 12C: Wave flying (if applicable during training and if possible at training site)
- lookout procedures
 - wave access techniques
 - speed limitations with increasing height
 - use of oxygen
- Exercise 13: Circuit, approach and landing
- procedures for rejoining the circuit
 - collision avoidance, look out techniques and procedures
 - circuit procedures, downwind, base leg
 - effect of wind on approach and touchdown speeds
 - use of flaps (if applicable)
 - visualisation of an aiming point
 - approach control and use of airbrakes
 - normal and crosswind approach and landing
 - short landing procedures/techniques
- Exercise 14: First solo
- instructor's briefing including limitations
 - awareness of local area, restrictions
 - use of required equipment

- observation of flight and debriefing by instructor
- Exercise 15: Advanced turning
- steep turns (45°)
 - stalling and spin avoidance in the turn and recovery
 - recoveries from unusual attitudes, including spiral dives
- Exercise 16: Out-landings
- gliding range
 - re-start procedures (only for self-launching and self-sustaining sailplanes)
 - selection of landing area
 - circuit judgement and key positions
 - circuit and approach procedures
 - actions after landing
- Exercise 17: Cross country flying
- Exercise 17A: Flight Planning
- weather forecast and actuals
 - NOTAMS, airspace considerations
 - map selection and preparation
 - route planning
 - radio frequencies (if applicable)
 - pre-flight administrative procedure
 - flight plan where required
 - mass and performance
 - alternate aerodromes and landing areas
 - safety altitudes
- Exercise 17B: In-Flight Navigation
- maintaining track and re-routing considerations
 - altimeter settings
 - use of radio and phraseology
 - in-flight planning
 - procedures for transiting regulated airspace / ATC liaison where required
 - uncertainty of position procedure
 - lost procedure
 - use of additional equipment where required
 - joining, arrival and circuit procedures at remote aerodrome
- Exercise 17C: Cross country techniques
- lookout procedures
 - maximising potential cross-country performance
 - risk reduction and threat reaction