

‘AMC & GM to Part-FCL — Issue 1, Amendment 10’

The Annex to Decision 2012/006/R of 19 April 2012 is hereby amended as follows:

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

- (a) deleted text is ~~struck through~~;
- (b) new or amended text is highlighted in **blue**;
- (c) an ellipsis ‘(...)’ indicates that the rest of the text is unchanged.

GM1 FCL.010 Abbreviations

The following abbreviations apply to the Acceptable Means of Compliance and Guidance Material to Part-FCL:

(...)

BEM Basic Empty Mass

BIR Basic instrument rating

BITD Basic Instrument Training Device

(...)

AMC1 FCL.310; FCL.515(b); FCL.615(b) 'Theoretical knowledge examinations' is replaced by the following:

AMC1 FCL.310; FCL.515(b); FCL.615(b); FCL.835(d) Theoretical knowledge examinations

LEARNING OBJECTIVES FOR ATPL, CPL, IR, CB-IR(A) and BIR

(a) Aeroplanes and helicopters

GENERAL

In the tables of this AMC, the applicable LOs for each ATPL, CPL, IR, CB-IR(A) are marked with an 'X', and for the BIR exam and BIR BK with the number 1, 2 or 3 (corresponding to the modules as mentioned in FCL.835 'Basic instrument rating (BIR)').

The LOs define the subject knowledge and applied knowledge, skills and attitudes that a student pilot should have assimilated during the theoretical knowledge course.

The LOs are intended to be used by an approved training organisation (ATO) when developing the Part-FCL theoretical knowledge elements of the appropriate course. It should be noted, however, that the LOs do not provide a ready-made ground training syllabus for individual ATOs, and should not be seen by organisations as a substitute for a thorough course design. Adherence to the LOs should become part of the ATO's compliance monitoring scheme as required by ORA.GEN.200(a)(6).

ATOs are required to produce a training plan for each of their courses based on the instructional systems design (ISD) methodology as specified in AMC2 ORA.ATO.230.

Additional guidance on the meaning and taxonomy of the verbs used in the LOs can be found in GM1 FCL.310; FCL.515(b); FCL.615(b); FCL.835(d).

TRAINING AIMS

After completion of the training, a student pilot should:

- be able to understand and apply the subject knowledge in order to be able to identify and manage threats and errors effectively;

— meet at least the Area 100 KSA minimum standard.

INTERPRETATION

The abbreviations used are ICAO abbreviations listed in ICAO Doc 8400 'ICAO Abbreviations and Codes', or those listed in GM1 FCL.010.

Where a LO refers to a definition, e.g. 'Define the following terms' or 'Define and understand' or 'Explain the definitions in ...', candidates are also expected to be able to recognise a given definition.

Below is a table showing the short references to applicable legislation and standards:

Reference	Legislation/Standard
The Basic Regulation	Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018
The Aircrew Regulation	Commission Regulation (EU) No 1178/2011 of 3 November 2011 (as amended)
Part-FCL	Annex I to Commission Regulation (EU) No 1178/2011 of 3 November 2011 (as amended)
Part-MED	Annex IV to Commission Regulation (EU) No 1178/2011 of 3 November 2011 (as amended)
CS-23, AMC & GM to CS-23, CS-25, CS-27, CS-29, CS-E and CS-Definitions	Refer to the respective EASA Certification Specifications / AMC & GM
Single European Sky Regulations	Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation)
	Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky (the service provision Regulation)
	Regulation (EC) No 551/2004 of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky (the airspace Regulation)
	Regulation (EC) No 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation)
Passenger Rights Regulation	Regulation (EC) No 261/2004 of the European Parliament and of the Council of 11 February 2004

establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights, and repealing Regulation (EEC) No 295/91

RTCA/EUROCAE

Refers to correspondingly numbered documents issued by the Radio Technical Commission for Aeronautics/ European Organisation for Civil Aviation Equipment

ITU Radio Regulation

International Telecommunication Union Radio Regulation

NASA TM-85652

National Aeronautics and Space Administration — Technical Memorandum 85652

‘Applicable operational requirements’ refers to, for the ATPL(A), CPL(A), ATPL(H)/IR, ATPL(H)/VFR, CPL(H), IR and CBIR, Annexes I, II, III, IV, V and VIII to Commission Regulation (EU) No 965/2012 of 5 October 2012 (as amended). For the BIR, it refers to Annexes I, II, V and VII to that Regulation.

The General Student Pilot Route Manual (GSPRM) contains planning data plus aerodrome and approach charts that may be used in theoretical knowledge training courses. The guidelines on its content can be found in this AMC, before the LO table for Subject 033 ‘Flight planning and monitoring’.

Excerpts from any aircraft manuals including but not limited to CAP 696, 697 and 698 for aeroplanes, and CAP 758 for helicopters may be used in training. Where questions refer to excerpts from aircraft manuals, the associated aircraft data will be provided in the examinations.

Some numerical data (e.g. speeds, altitudes/levels and masses) used in questions for theoretical knowledge examinations may not be representative for helicopter operations, but the data is satisfactory for the calculations required.

Note: In all subject areas, the term ‘mass’ is used to describe a quantity of matter, and ‘weight’ when describing the force. However, the term ‘weight’ is normally used in aviation to colloquially describe mass. The pilot should always note the units to determine whether the term ‘weight’ is being used to describe a force (e.g. unit newton) or quantity of matter (e.g. unit kilogram).

DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LOs FOR ATPL, CPL, IR, CB-IR(A) and BIR

GENERAL

The detailed theoretical knowledge syllabus outlines the topics that should be taught and examined in order to meet the theoretical knowledge requirements appropriate to ATPL, MPL, CPL, IR, CB-IR(A) and BIR.

For each topic in the detailed theoretical knowledge syllabus, one or more LOs are set out in the appendices as shown below:

— Appendix 010 AIR LAW

— Appendix 021 AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME, SYSTEMS AND POWER PLANT

- Appendix 022 AIRCRAFT GENERAL KNOWLEDGE – INSTRUMENTATION
- Appendix 031 FLIGHT PERFORMANCE AND PLANNING – MASS AND BALANCE
- Appendix 032 FLIGHT PERFORMANCE AND PLANNING – PERFORMANCE – AEROPLANES
- Appendix 033 FLIGHT PERFORMANCE AND PLANNING – FLIGHT PLANNING AND MONITORING
- Appendix 034 FLIGHT PERFORMANCE AND PLANNING – PERFORMANCE – HELICOPTERS
- Appendix 040 HUMAN PERFORMANCE AND LIMITATIONS
- Appendix 050 METEOROLOGY
- Appendix 061 NAVIGATION – GENERAL NAVIGATION
- Appendix 062 NAVIGATION – RADIO NAVIGATION
- Appendix 070 OPERATIONAL PROCEDURES
- Appendix 081 PRINCIPLES OF FLIGHT – AEROPLANES
- Appendix 082 PRINCIPLES OF FLIGHT – HELICOPTERS
- Appendix 090 RADIO COMMUNICATIONS
- Appendix AREA 100 KNOWLEDGE, SKILLS AND ATTITUDES (KSA)

(b) Airships

SYLLABUS OF THEORETICAL KNOWLEDGE FOR CPL AND IR

The applicable items for each licence or rating are marked with 'x'. An 'x' on the main title of a subject means that all the subdivisions are applicable.'

		CPL	IR
1.	AIR LAW AND ATC PROCEDURES	x	
	INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS		
	AIRWORTHINESS OF AIRCRAFT		
	AIRCRAFT NATIONALITY AND REGISTRATION MARKS		
	PERSONNEL LICENSING		x
	RULES OF THE AIR		x
	PROCEDURES FOR AIR NAVIGATION SERVICES: AIRCRAFT OPERATIONS		x
	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT		x
	AERONAUTICAL INFORMATION SERVICE		x
	AERODROMES		x
	FACILITATION		
	SEARCH AND RESCUE		
	SECURITY		

		CPL	IR
	AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION		
2.	AIRSHIP GENERAL KNOWLEDGE: ENVELOPE, AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT AND EMERGENCY EQUIPMENT	x	
	DESIGN, MATERIALS, LOADS AND STRESSES		
	ENVELOPE AND AIRBAGS		
	FRAMEWORK		
	GONDOLA		
	FLIGHT CONTROLS		
	LANDING GEAR		
	HYDRAULICS AND PNEUMATICS		
	HEATING AND AIR CONDITIONING		
	FUEL SYSTEM		
	PISTON ENGINES		
	TURBINE ENGINES (BASICS)		
	ELECTRICS		
	FIRE PROTECTION AND DETECTION SYSTEMS		
	MAINTENANCE		
3.	AIRSHIP GENERAL KNOWLEDGE: INSTRUMENTATION	x	
	SENSORS AND INSTRUMENTS		
	MEASUREMENT OF AIR DATA AND GAS PARAMETERS		
	MAGNETISM: DIRECT READING COMPASS AND FLUX VALVE		
	GYROSCOPIC INSTRUMENTS		
	COMMUNICATION SYSTEMS		
	ALERTING SYSTEMS		
	INTEGRATED INSTRUMENTS: ELECTRONIC DISPLAYS		
	FLIGHT MANAGEMENT SYSTEM (GENERAL BASICS)		
	DIGITAL CIRCUITS AND COMPUTERS		
4.	FLIGHT PERFORMANCE AND PLANNING	x	
4.1.	MASS AND BALANCE: AIRSHIPS	x	
	PURPOSE OF MASS AND BALANCE CONSIDERATIONS		
	LOADING		
	FUNDAMENTALS OF CG CALCULATIONS		

		CPL	IR
	MASS AND BALANCE DETAILS OF AIRCRAFT		
	DETERMINATION OF CG POSITION		
	PASSENGER, CARGO AND BALLAST HANDLING		
4.2.	FLIGHT PLANNING AND FLIGHT MONITORING		
	FLIGHT PLANNING FOR VFR FLIGHTS	x	
	FLIGHT PLANNING FOR IFR FLIGHTS		x
	FUEL PLANNING	x	x
	PRE-FLIGHT PREPARATION	x	x
	ATS FLIGHT PLAN	x	x
	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING	x	x
4.3.	PERFORMANCE: AIRSHIPS	x	
	AIRWORTHINESS REQUIREMENTS		
	BASICS OF AIRSHIP PERFORMANCE		
	DEFINITIONS AND TERMS		
	STAGES OF FLIGHT		
	USE OF FLIGHT MANUAL		
5.	HUMAN PERFORMANCE	x	
	HUMAN FACTORS: BASIC CONCEPTS		
	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE		
	BASIC AVIATION PSYCHOLOGY		
6.	METEOROLOGY	x	
	THE ATMOSPHERE		
	WIND		
	THERMODYNAMICS		
	CLOUDS AND FOG		
	PRECIPITATION		
	AIR MASSES AND FRONTS		
	PRESSURE SYSTEMS		
	CLIMATOLOGY		
	FLIGHT HAZARDS		
	METEOROLOGICAL INFORMATION		
7.	NAVIGATION		
7.1.	GENERAL NAVIGATION	x	
	BASICS OF NAVIGATION		
	MAGNETISM AND COMPASSES		
	CHARTS		

		CPL	IR
	DR NAVIGATION		
	IN-FLIGHT NAVIGATION		
7.2.	RADIO NAVIGATION		
	BASIC RADIO PROPAGATION THEORY	x	x
	RADIO AIDS	x	x
	RADAR	x	x
	INTENTIONALLY LEFT BLANK		
	AREA NAVIGATION SYSTEMS AND RNAV/FMS		x
	GNSS	x	x
8.	OPERATIONAL PROCEDURES AIRSHIP	x	
	GENERAL REQUIREMENTS		
	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)		
	EMERGENCY PROCEDURES		
9.	PRINCIPLES OF FLIGHT	x	
9.1.	PRINCIPLES OF FLIGHT: AIRSHIPS	x	
	BASICS OF AEROSTATICS		
	BASICS OF SUBSONIC AERODYNAMICS		
	AERODYNAMICS OF AIRSHIPS		
	STABILITY		
	CONTROLLABILITY		
	LIMITATIONS		
	PROPELLERS		
	BASICS OF AIRSHIP FLIGHT MECHANICS		
10.	COMMUNICATIONS		
10.1.	VFR COMMUNICATIONS	x	
	DEFINITIONS	x	
	GENERAL OPERATING PROCEDURES	x	
	RELEVANT WEATHER INFORMATION TERMS (VFR)	x	
	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE	x	
	DISTRESS AND URGENCY PROCEDURES	x	
	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES	x	
10.2.	IFR COMMUNICATIONS		
	DEFINITIONS		x

		CPL	IR
	GENERAL OPERATING PROCEDURES		x
	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE		x
	DISTRESS AND URGENCY PROCEDURES		x
	RELEVANT WEATHER INFORMATION TERMS (IFR)		x
	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES		x
	MORSE CODE		x

GM1 FCL.310; FCL.515(b); FCL.615(b); FCL.835(d) Theoretical knowledge examinations

[...]

AMC1 FCL.615(b) IR – Theoretical knowledge and flight instruction

SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE IR FOLLOWING THE COMPETENCY-BASED MODULAR COURSE AND ~~EIR~~ BIR

- (a) The syllabus for the theoretical knowledge instruction and examination for the ATPL, MPL, CPL and IR in ~~AMC1 FCL.310, FCL.515(b) and FCL.615(b)~~ **AMC1 FCL.310; FCL.515(b); FCL.615(b), FCL.835(d)** should be used for the CB-IR(A) and the ~~EIR~~ **BIR** respectively.
- (b) Aspects related to threat and error management (TEM) should be included in an integrated manner, taking into account the particular risks associated to the licence and the activity.
- (c) An applicant who has completed a modular IR(A) course according to Appendix 6 Section A and passed the IR(A) theoretical knowledge examination should be fully credited towards the requirements of theoretical knowledge instruction and examination for a competency-based IR(A) or EIR within the validity period of the examination. An applicant wishing to transfer to a competency-based IR(A) or ~~EIR~~ **BIR** course during a modular IR(A) course should be credited towards the requirements of theoretical knowledge instruction and examination for a competency-based IR(A) or ~~EIR~~ **BIR** for those subjects or theory items already completed.
- ~~(d) An applicant for an IR(A) who has completed an EIR theoretical knowledge course and passed the EIR theoretical knowledge examination according to FCL.825 should be fully credited towards the requirements of theoretical knowledge instruction and examination for an competency-based IR(A) according to Annex 6 Section Aa.~~

AMC1 FCL.720.A(b)(2)(i) Experience requirements and prerequisites for the issue of class or type ratings – aeroplanes**ADDITIONAL THEORETICAL KNOWLEDGE FOR A CLASS OR TYPE RATING FOR HIGH-PERFORMANCE SINGLE-PILOT (SP) AEROPLANES**

[...]

- (g) The applicant who has completed a competency-based modular IR(A) course according to Appendix 6 Aa ~~or EIR course according to FCL.825~~ needs to complete both VFR and IFR parts of this course.

[...]

AMC2 FCL.720.A(b)(2)(i) Experience requirements and prerequisites for the issue of class or type ratings – aeroplanes**ADDITIONAL THEORETICAL KNOWLEDGE FOR A CLASS OR TYPE RATING FOR HIGH-PERFORMANCE **SINGLE-PILOT (SP)** AEROPLANES**

[...]

- (b) has completed a competency-based modular IR(A) course according to Appendix 6 Aa ~~or EIR course according to FCL.825~~; and

[...]

AMC1 FCL.825(a) En Route instrument rating (EIR) is deleted

AMC1 FCL.825(c) En route instrument rating (EIR) is deleted

AMC1 FCL.825(d) En route instrument rating (EIR) is deleted

AMC2 FCL.825(d) En-route instrument rating (EIR) is deleted

AMC3 FCL.825(d) En route instrument rating (EIR) is deleted

GM1 FCL.825(d) En-route instrument rating (EIR) is deleted

AMC1 FCL.825(e); (g) En route instrument rating (EIR) is deleted

AMC1 FCL.825(g)(2) En route instrument rating (EIR) is deleted

AMC1 FCL.825(h) En route instrument rating (EIR) is deleted

AMC2 FCL.825(h) En route instrument rating (EIR) is deleted

AMC1 FCL.825(i) En route instrument rating (EIR) is deleted

AMC1 FCL.835 Basic instrument rating (BIR)

BASIC INSTRUMENT RATING (BIR) COMPETENCIES

This AMC provides the competency criteria required for the relevant training modules of the BIR.

(a) Modules

The following modules are applicable:

- (1) Module 1: Pre-flight operations and general handling;
- (2) Module 2: Departure, precision (3D) approach procedures and non-precision (2D) approach procedures;
- (3) Module 3: En-route IFR procedures;
- (4) Module 4: Optional flight with one engine inoperative (multi-engine aeroplanes only).

Upon completion of the training, an applicant for a BIR should have received instruction on the same class of aeroplane to be used in the test.

(b) Flight tolerances

The following limits should apply and it should be borne in mind that such tolerances are expected only at the end of the training. Due consideration should be given to make allowance for turbulent conditions and the handling qualities and performance of the aircraft used:

Height

Generally	± 100 feet
Starting a go-around at decision height or altitude	+ 50 feet/– 0 feet
Minimum descent height, MAP or altitude	+ 50 feet/– 0 feet

On radio aids	±5°
For 'angular' deviations	Half-scale deflection, azimuth and glide path (e.g. LPV, ILS, MLS, GLS)
2D (LNAV) and 3D (LNAV/VNAV) 'linear' lateral deviations	Cross-track error/deviation shall normally be limited to ± ½ the RNP value associated with the procedure. Brief deviations from this standard up to a maximum of one time the RNP value are allowable.
3D linear vertical deviations (e.g. RNP APCH (LNAV/VNAV) using Baro VNAV)	Not more than – 75 feet below the vertical profile at any time, and not more than + 75 feet above the vertical profile at or below 1 000 feet above aerodrome level.

Heading

All engines operating	± 5°
With simulated engine failure	± 10°

Speed

All engines operating	± 5 knots
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With simulated engine failure	+ 10 knots/– 5 knots
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Given that the intention of the training for the BIR is to be entirely competency-based, the student and instructor need detailed guidance on these competencies. The following information is intended to provide that guidance. Each element of the training modules is described in text followed by a table which gives guidance on the competencies required and how to assess them using the key competencies model of:

OBJECTIVE (of the training item), and **SKILL — KNOWLEDGE — ATTITUDE** (to achieve the objective)

(c) Sample table

The table is separated into four rows as follows:

Training element	
Title of assessed item taken from training module	
OBJECTIVE	This cell describes the applicant's proficiency to be assessed by the training organisation or instructor.
SKILL	<p>This cell describes the competency criteria that involve the applicant demonstrating:</p> <ul style="list-style-type: none"> — manual aircraft control; — effective flight path management through proper use of flight management system guidance and automation; and — application of procedures.
KNOWLEDGE	This cell describes the knowledge needed to meet the objective's proficiency requirements.
ATTITUDE	<p>This cell describes the competency criteria encapsulated by airmanship, crew resource management (CRM), and threat and error management (TEM), such as:</p> <ul style="list-style-type: none"> — situation awareness; — effective communication; — leadership and teamwork; — effective workload management; — effective problem-solving and decision-making.
General	
<p>In most phases of flight there are competencies that apply to a group of manoeuvres, e.g. turns, or even to the whole phase of flight. In order to avoid repetition, the common competencies are grouped under the 'General' item heading.</p>	

(d) Content of the training
(1) Module 1: Pre-flight operations and general handling

Use of flight manual (or equivalent), especially for aircraft performance calculation, and mass and balance

Module 1: Pre-flight operations and general handling	
Use of flight manual (or equivalent), especially for aircraft performance, and mass and balance	
OBJECTIVE	<p>(A) Proficient in the use of the flight manual (or equivalent).</p> <p>(B) Proficient in the mass and balance schedule.</p> <p>(C) Proficient in the aircraft performance calculation.</p>
SKILL	<p>(A) Use proficiently performance charts, tables, graphs or other data, when available, relating to items such as:</p> <ul style="list-style-type: none"> (1) accelerate-stop distance available; (2) landing distance available; (3) take-off performance; (4) one engine inoperative; (5) climb performance; (6) cruise performance; (7) fuel consumption, range, and endurance; (8) go-around from rejected landing; (9) operational factors affecting aircraft performance; (10) other performance data appropriate to the test aircraft; (11) airspeeds used during specific phases of flight; (12) effects of meteorological conditions upon performance characteristics and correctly application of these factors to a specific chart, table, graph or other performance data; (13) impact of relevant NOTAMs on the conduct of the flight; (14) aircraft documentation.
KNOWLEDGE	<p>(A) Part-NCO (non-commercial air operations)</p> <p>(B) Pilot operating manual (POM) or flight manual chapters dedicated to:</p> <ul style="list-style-type: none"> (15) limitations; (16) performance calculation in general; (17) performance calculation and associated procedures when specific conditions exist.

ATTITUDE	(A) Situation awareness: Understand the responsibilities of proper pre-departure planning and preparations.
	(B) Effective communication: Ensure appropriate and clear communication with all ground service personnel (ATC, dispatch, MET).
	(C) Leadership and teamwork: Manage passengers and ground personnel, as applicable.
	(D) Effective workload management: Provide sufficient time and manage the workload for pre-flight procedures (including documentation) to be completed in an efficient manner.
	(E) Effective problem-solving and decision-making: (1) Make appropriate decisions on all identified threats; (2) Plan and implement suitable mitigation actions.

Pre-flight inspection

Module 1: Pre-flight operations and general handling	
Pre-flight inspection	
OBJECTIVE	Full initial pre-flight inspection in accordance with the approved checklist assuming the risk to IFR flights such as icing conditions, database, etc.
SKILL	(A) Perform all elements of the aeroplane pre-flight inspections. (B) Confirm that the aeroplane is in a serviceable and safe condition for IFR flight.
KNOWLEDGE	(A) Confirm the validity of database and receiver autonomous integrity monitoring (RAIM) prediction, if applicable. (B) Be aware of the possible effects of equipment defects or unserviceability.
ATTITUDE	(A) Situation awareness: (1) Note the position of the aircraft, any surrounding hazards, and location of emergency equipment, and take appropriate action to minimise potential risks; (2) Note effects of engine start on the surrounding environment; (3) Note the limitations of software and equipment such as flight director (FD), autopilot (AP), etc. (B) Effective communication: (1) Demonstrate correct communication; (2) Make a correct passenger and departure briefing. (C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable). (D) Effective workload management: (1) Confirm from the checklist that all pre-flight requirements have been fulfilled; (2) Demonstrate an organised approach to performing inspection of aircraft and equipment. (E) Effective problem-solving and decision-making: (1) Identify possible defects and threats; (2) Take corrective action.

Taxiing

Module 1: Pre-flight operations and general handling	
Taxiing	
OBJECTIVE	<p>(A) Be proficient in all recommended taxiing checks and procedures.</p> <p>(B) Comply with ATC instructions, airport markings and signals.</p>
SKILL	<p>(A) Obtain appropriate clearance before taxiing and before crossing or entering active runways.</p> <p>(B) Comply with instructions issued by ATC.</p> <p>(C) Maintain correct and positive aircraft control.</p> <p>(D) Take due consideration of environmental conditions (e.g. surface wind, contamination, surface condition, etc.).</p> <p>(E) Maintain adequate separation from other aircraft, obstructions, and persons.</p> <p>(F) Accomplish the applicable briefing or checklist items, and follow the recommended procedures.</p>
KNOWLEDGE	<p>(A) The need to correctly perform taxiing checks.</p> <p>(B) Understanding the following:</p> <ol style="list-style-type: none"> (1) runway hold lines and stop bar lighting as applicable; (2) localiser and glide slope sensitive and critical areas; (3) beacons, as well as other surface control markings and lighting; (4) taxiing speeds; (5) rules and procedures in the event of loss of communication (priority, lighting signals); (6) rules for manoeuvring in reduced meteorological conditions.
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Maintain constant vigilance and lookout during the taxiing operation; (2) Use headings in poor visibility conditions to confirm the path; (3) Maintain awareness of taxiing speeds appropriate to the conditions and limitations. <p>(B) Effective communication:</p> <p>Demonstrate correct ATC communication (where applicable).</p> <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <p>Divide attention properly inside and outside the cockpit.</p> <p>(E) Effective problem-solving and decision-making:</p> <ol style="list-style-type: none"> (1) Stop the aircraft to check position when in doubt; (2) Assess major risks: collision with other aircraft, obstacles, and aircraft security.

Transition to instrument flight

Module 1: Pre-flight operations and general handling	
Transition to instrument flight (must be performed by sole reference to instruments)	
OBJECTIVE	Establish the climb, complete a smooth transition to instrument flight, and complete post-take-off checks and drills.
SKILL	<p>Following the initial take-off procedure:</p> <p>(A) Compare the visual attitude achieved with the attitude indicator display;</p> <p>(B) Assess the performance instrument information to confirm that the aircraft has achieved the desired climb parameters;</p> <p>(C) Commence appropriate instrument scanning techniques.</p>
KNOWLEDGE	<p>(A) Demonstrate the required technical knowledge of the function of the instruments in order to safely fly the aircraft by sole reference to instruments.</p> <p>(B) Understand the need to compare the attitude indicator with the real world.</p> <p>(C) Understand the need to verify that the expected performance has been achieved.</p>
ATTITUDE	<p>(A) Situation awareness: Monitor aircraft flight path at all stages of the transition to instrument flight.</p> <p>(B) Effective communication: Demonstrate effective communication (as applicable).</p> <p>(C) Leadership and teamwork: Demonstrate effective coordination (as applicable).</p> <p>(D) Effective problem-solving and decision-making:</p> <p>(1) Correctly assess take-off and climb hazards, particularly those related to other aircraft, aerodrome infrastructure, obstacles, and weather;</p> <p>(2) Have a strategy to mitigate the threats.</p>

ATC liaison — compliance, radio-telephony (RTF) procedures

Module 1: Pre-flight operations and general handling	
ATC liaison — compliance, radio-telephony (RTF) procedures (must be performed by sole reference to instruments)	
OBJECTIVE	<p>(A) Ability to communicate clearly with ATC using appropriate RTF phraseology in order to perform the flight as planned in compliance with ATC instructions.</p> <p>(B) In the event of changes to the plan, such changes should be negotiated with ATC to ensure continued compliance.</p>
SKILL	<p>(A) ICAO language proficiency level 4 or greater.</p> <p>(B) The ability to use standard and, where applicable, non-standard RTF procedures.</p> <p>(C) Understand the implications of the received clearance, and be able to action the same safely and effectively.</p> <p>(D) Interpretation of charts and maps.</p>
KNOWLEDGE	<p>(A) Specific ATC phrases, e.g. ETA vs EAT.</p> <p>(B) Aircraft category for instrument approaches.</p> <p>(C) Performance of the aircraft and its ability to meet the ATC clearance.</p> <p>(D) ICAO standard phraseology and national differences.</p> <p>(E) Pilot or controller responsibilities including tower, en-route, and appropriate clearances.</p> <p>(F) Adequate knowledge of RTF failure procedures.</p>
ATTITUDE	<p>(A) Situation awareness: Establish communication with ATC on the correct frequencies and at the appropriate times.</p> <p>(B) Effective communication: Read back correctly, in a timely manner, the ATC clearance in the sequence received.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Copy correctly, in a timely manner, the ATC clearance as issued.</p> <p>(E) Effective problem-solving and decision-making: Interpret correctly the ATC clearance received and, when necessary, request clarification, verification, or change.</p>

Control of the aeroplane by reference solely to instruments, including: level flight at various speeds, level turns at rate 1 and up to 30 degrees angle of bank, trim

Module 1: Pre-flight operations and general handling (must be performed by sole reference to instruments)	
Control of the aeroplane by reference solely to instruments, including: level flight at various speeds, level turns at rate 1 and up to 30 degrees angle of bank, trim	
OBJECTIVE	<p>(A) Smooth control of heading, altitude, speed, power, trim and ancillary controls.</p> <p>(B) Correct use of autopilot, where appropriate.</p> <p>(C) Demonstrate correct technique for instrument flight manoeuvring within specified limits.</p> <p>(D) Maintain balanced and trimmed flight.</p>
SKILL	<p>(A) Maintain altitude, heading and balance, by sole reference to instruments, using correct instrument confirmation, and coordinated control application.</p> <p>(B) Maintain altitude, heading and balance, whilst accelerating or decelerating to specific speeds, as determined by the aircraft flight manual, or as specified by the examiner.</p> <p>(C) Complete coordinated level turns at rate 1 and maintain entry speed onto specified headings.</p> <p>(D) Complete coordinated level turns at up to 30 degrees bank whilst maintaining entry speed onto specified headings.</p> <p>(E) Demonstrate correct procedure for pre-flight functional check of autopilot or flight director.</p> <p>(F) Demonstrate correct operating procedure for autopilot or flight director in all modes.</p>
KNOWLEDGE	<p>(A) Procedures for controlling the aircraft in accordance with the POM, aircraft flight manual and operations manual, as appropriate.</p> <p>(B) Autopilot system fitted to the aircraft.</p> <p>(C) Procedures for controlling the aircraft with automatic flight control systems, in accordance with the POM, aircraft flight manual and operations manual, as appropriate.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Maintain awareness of the autopilot modes selected, where applicable;</p> <p>(2) Understand the need for trimmed, in-balance flight when manually flying the aircraft.</p> <p>(B) Effective communication:</p> <p>As applicable to the specific situation.</p> <p>(C) Leadership and teamwork:</p> <p>As applicable to the specific situation.</p> <p>(D) Effective workload management:</p> <p>Use an appropriate 'division of attention' when completing flight log, etc., whilst manually controlling the aircraft.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>Prioritise activities to allow maintenance of correct instrument scan.</p>

Climbing and descending turns with sustained rate-1 turn

Module 1: Pre-flight operations and general handling (must be performed by sole reference to instruments)	
Climbing and descending turns with sustained rate-1 turn	
OBJECTIVE	<p>Complete a coordinated climb or descent and turn at rate 1 using:</p> <p>(A) the recommended climbing speed; or</p> <p>(B) descent speed and nominated rates of descent for the aircraft.</p>
SKILL	<p>(A) Establish the recommended entry airspeed in straight and level flight.</p> <p>(B) Roll into a coordinated climbing or descending turn with a bank angle commensurate with the speed to produce a rate-1 turn. Maintain the bank angle in a stable, balanced turn.</p> <p>(C) Apply smooth, coordinated pitch, bank, and power adjustments to maintain the specified attitude and airspeed.</p> <p>(D) Roll out of the turn and stabilise the aircraft in straight and level flight.</p> <p>(E) Recover accurately onto the desired heading and at the desired airspeed for straight and level flight.</p>
KNOWLEDGE	<p>(A) Speed and bank angle relationship to establish a rate-1 turn.</p> <p>(B) Recommended climb speed and power settings.</p> <p>(C) Recommended speed and power settings for descent at nominated descent rates.</p>
ATTITUDE	<p>(A) Effective workload management: Demonstrate orientation throughout the manoeuvre.</p> <p>(B) Effective problem-solving and decision-making: React to departure from stabilised steep turn attitude.</p>

Recovery from unusual attitudes, including sustained 45° bank turns and steep descending turns

Module 1: Pre-flight operations and general handling (must be performed by sole reference to instruments)	
Recovery from unusual attitudes, including sustained 45° bank turns and steep descending turns	
OBJECTIVE	Recover from unusual attitudes, including sustained 45° bank turns and steep descending turns using the correct technique to minimise height loss.
SKILL	<p>(A) Interpretation of the instrument displays to identify the reason behind the unusual attitude.</p> <p>(B) Application of the correct recovery technique.</p> <p>(C) Avoid any indication of an approaching stall, abnormal flight attitude, or exceeding any structural or operating limitation during any part of the manoeuvre.</p>
KNOWLEDGE	Correct recovery technique using 'full' panel instruments, as appropriate.
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) recognition of unusual attitude; (2) after recovery: why did the aircraft enter the unusual attitude, e.g. distraction, instrument failure, mishandling, hypoxia? (3) after recovery: is the aircraft above safety altitude? (4) which is a safe direction to fly whilst assessing the situation? <p>(B) Effective workload management: Address the situation to recover situation awareness.</p> <p>(C) Effective communication:</p> <ol style="list-style-type: none"> (1) Advise other crew members of the situation; (2) Advise ATC if appropriate. <p>(D) Leadership and teamwork: Communicate and coordinate, as appropriate, during the recovery manoeuvre.</p> <p>(E) Effective problem-solving and decision-making: React promptly to departure from controlled flight.</p>

Recovery from approach to stall in level flight, climbing/descending turns and in landing configuration

Module 1: Pre-flight operations and general handling (must be performed by sole reference to instruments)	
Recovery from approach to stall in level flight, climbing/descending turns and in landing configuration (may be performed in an FSTD, if approved for this procedure)	
OBJECTIVE	<p>(A) Demonstrate how to conduct appropriate safety checks before stalling.</p> <p>(B) Establish the required aircraft configuration and stall entry, as appropriate, from straight and level or manoeuvring flight.</p> <p>(C) Maintain heading (or 10–30° bank angle, as required) to stall entry.</p> <p>(D) Recognise the symptoms of stall or approaching stall, and initiate the correct recovery action.</p> <p>(E) Recover, using the correct techniques, to return to a clean configuration best rate climb, or as otherwise directed by the examiner.</p> <p>(F) Complete all the necessary checks and drills.</p>
SKILL	<p>(A) Select an entry altitude in accordance with safety requirements. When accomplished in an FSTD, the entry altitude may be at low, intermediate or high altitude as appropriate for the aircraft and the configuration.</p> <p>(B) Slowly establish the pitch attitude (using trim, elevator or stabiliser), bank angle, and power setting that will induce stall at the desired target airspeed. Normal trim should be used as the aircraft speed reduces, with trim at different, or as stated in the flight manual restrictions.</p> <p>(C) Recognise and announce the first indication of a stall appropriate to the specific aircraft design and initiate recovery.</p> <p>(D) Recover to a reference airspeed, altitude and heading, allowing only the acceptable altitude or airspeed loss and heading deviation using the procedures described in the aircraft flight manual or operator safety manual, as applicable.</p> <p>(E) Demonstrate smooth, positive control during entry, approach to a stall, and recovery.</p>
KNOWLEDGE	<p>(A) Academic knowledge.</p> <p>(B) Limitations.</p> <p>(C) Safety procedures before starting with stall exercises.</p> <p>(D) Stall recovery procedures and techniques.</p> <p>(E) Flight manual.</p> <p>(F) Operator safety manual.</p>
ATTITUDE	<p>(A) Situation awareness: Ensure the aircraft is in a safe area and clear of hazards prior to accomplishing an approach to a stall.</p> <p>(B) Effective communication: Communicate and coordinate.</p> <p>(C) Leadership and teamwork: Coordinate to ensure that there is adequate separation from other aircraft before initiating the stall.</p> <p>(D) Effective workload management: As applicable to the specific situation.</p> <p>(E) Effective problem-solving and decision-making: As applicable to the specific situation.</p>

Limited panel instrument flight: stabilised climb or descent, level turns at rate 1 onto given headings, recovery from unusual attitudes

Module 1: Pre-flight operations and general handling (must be performed by sole reference to instruments)	
Limited panel instrument flight: stabilised climb or descent, level turns at rate 1 onto given headings, recovery from unusual attitudes — only applicable to aeroplanes NB: Most modern light aircraft are now fitted with a 'standby' horizon in addition to or instead of turn rate gyros. Where this is the case, the pilot under training is to be taught these exercises using the 'standby' horizon.	
OBJECTIVE	Demonstrate continued control of the aircraft by interpreting aircraft attitude from aircraft standby instruments.
SKILL	(A) Complete flight in straight and level, and climbing and descending, at nominated speeds. Fly turns at rate 1 onto nominated headings using the correct technique and demonstrating correct instrument scan and interpretation. (B) Recover from unusual attitudes including sustained 45° bank turns and steep descending and climbing turns using the correct technique to minimise height loss.
KNOWLEDGE	(A) Demonstrate the theoretical knowledge and understand the dangers of 'looping error'. (B) Variation of techniques. (C) Limitations of the use of direct-reading compass systems.
ATTITUDE	(A) Situation awareness: (1) recognition of the reason behind the unusual attitude; (2) after recovery: why did the aircraft enter the unusual attitude, e.g. distraction, instrument failure, mishandling, etc.? (3) after recovery: is the aircraft above safety altitude? (4) which is a safe direction to fly whilst assessing the situation? (B) Effective workload management: Address the situation to recover situation awareness. (C) Effective communication: Advise ATC if appropriate. (D) Leadership and teamwork: Communicate and coordinate as appropriate. (E) Effective problem-solving and decision-making: React promptly to departure from controlled flight.

(2) Module 2: Departure, precision (3D) approach procedures and non-precision (2D) approach procedures

Weather minima

Module 2: Departure and arrivals, 3D approach and 2D approach	
Weather minima	
OBJECTIVE	<p>Confirmation of weather affecting departure, route, destination and diversion; acceptability for the flight.</p> <p>Determination of the expected instrument approach minimum heights/altitudes in accordance with NCO requirements.</p>
SKILL	<p>Ability to interpret published weather charts such as synoptic charts and coded messages (TAF, METAR, SNOWTAM, etc.).</p>
KNOWLEDGE	<p>(A) Air masses and local weather effects.</p> <p>(B) Weather codes.</p> <p>(C) NCO requirements.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Be able to interpret and understand the weather factors and all the associated potential hazards likely to affect the planned flight;</p> <p>(2) Assess correctly whether the weather minima required at destination and diversion airfields are satisfactory for the conduct of the flight.</p> <p>(B) Effective communication:</p> <p>As applicable to the specific situation.</p> <p>(C) Leadership and teamwork:</p> <p>As applicable to the specific situation.</p> <p>(D) Effective workload management:</p> <p>As applicable to the specific situation.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>Make appropriate decisions based on available weather information.</p>

Pre-take-off briefing, take-off

Module 2: Departure and arrivals, 3D approach and 2D approach	
Pre-take-off briefing, take-off	
OBJECTIVE	<p>(A) Perform a safe take-off in compliance with ATC clearance, procedure margins and within the flight manual limits taking into account environmental conditions.</p> <p>(B) Obtain ATC clearance for departure, flight deck preparation, confirmation of departure, and passenger emergency briefing. Actions to be taken with regard to the aeroplane if an emergency occurs during departure should be covered in the pre-flight main briefing.</p>
SKILL	<p>(A) Obtain appropriate take-off clearance using standard RTF phraseology, and perform all required pre-take-off checks (including visually scanning for other aircraft).</p> <p>(B) Position the aircraft correctly for take-off taking into account any crosswind condition.</p> <p>(C) Apply the controls correctly to maintain longitudinal alignment on the centre line of the runway prior to initiating and during the take-off.</p> <p>(D) Set the throttle(s) to take-off power with appropriate checks (e.g. verify the expected engine performance, monitor engine controls, settings and instruments during take-off to ensure all predetermined parameters are maintained).</p> <p>(E) Use the correct take-off technique by applying recommended speeds for rotation, lift-off and initial climb.</p> <p>(F) Adjust the controls to attain the desired pitch attitude at the predetermined airspeed to obtain the desired performance.</p> <p>(G) Ensure a safe climb and departure in accordance with clearance and with due regard for other air traffic, noise abatement and wake turbulence avoidance procedures, adjusting power and aircraft configuration, and maintain desired path (or heading) as appropriate.</p> <p>(H) Complete all necessary post-take-off checks.</p> <p>(I) Perform or call for and verify the accomplishment of landing gear and flap retractions, power adjustments, and other required pilot-related activities at the required airspeeds within the tolerances established in the flight manual.</p>
KNOWLEDGE	<p>(A) Limitations, procedure margins.</p> <p>(B) Normal procedures (understand the different techniques dependent on varying flap settings and environmental conditions).</p> <p>(C) Abnormal and emergency procedures.</p> <p>(D) Performance.</p> <p>(E) Applicable rules on wake turbulence separation.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Monitor engine parameters for any deviations; (2) Monitor aircraft acceleration during take-off; (3) Monitor aircraft ground and flight path at all stages of the take-off procedure. <p>(B) Effective communication:</p> <p>Demonstrate effective communication with ATC (as applicable).</p> <p>(C) Leadership and teamwork:</p> <p>Demonstrate effective coordination with ATC (as applicable).</p> <p>(D) Effective problem-solving and decision-making:</p> <p>Correctly assess take-off and climb hazards, particularly those related to other aircraft, aerodrome infrastructure, obstacles and weather, and have a strategy to mitigate the threats.</p>

Instrument departure procedures, altimeter setting

Module 2: Departure and arrivals, 3D approach and 2D approach	
Instrument departure procedures, altimeter setting (must be performed by sole reference to instruments)	
OBJECTIVE	Complete the standard instrument departure (SID) procedure or follow the ATC departure instructions; use the correct altimeter-setting procedure; maintain aeroplane control, speed, heading and level.
SKILL	<ul style="list-style-type: none"> (A) Identify any navigation aids used. (B) Follow any noise routing or departure procedures and ATC clearances. (C) Take appropriate anti-icing/de-icing actions. (D) Use the current and appropriate navigation publications for the proposed departure. (E) Make correct use of instruments, flight director, autopilot, navigation equipment and communication equipment appropriate to the performance of the departure. (F) Intercept and follow, in a timely manner, all courses, radials and bearings (QDM/QDRs) appropriate to the departure route and ATC clearance. (G) Comply, in a timely manner, with all ATC clearances, instructions and restrictions. (H) Perform the aircraft briefing or checklist items appropriate to the departure. (I) Adhere to airspeed restrictions and adjustments required by regulations, ATC and the flight manual. (J) Maintain the appropriate airspeed, altitude, headings and accurately track radials, courses, and bearing. (K) Complete the appropriate checklist.
KNOWLEDGE	<ul style="list-style-type: none"> (A) Weather phenomena, particularly the conditions favouring the formation of ice on the airframe and engines. (B) Limitations of the use of ground-based navigation aids. (C) Limitations of the use of RNAV (GNSS) derived navigational information. (D) Division of airspace and altimeter-setting procedures associated with the current airspace environment. (E) The departure procedure in use and the safety implications of not adhering to the procedure. (F) Altimetry procedures in accordance with the applicable regulations.
ATTITUDE	<ul style="list-style-type: none"> (A) Situation awareness: <ul style="list-style-type: none"> (1) Understanding of any clearance limits or variations to SID/initial departure clearance instructed by ATC; (2) Awareness of the aircraft performance and the ability to conform to ATC clearances (speed, height, time limits, etc.). (B) Effective communication: <ul style="list-style-type: none"> Demonstrate correct communication with ATC (where applicable). (C) Leadership and teamwork: <ul style="list-style-type: none"> Demonstrate correct coordination with ATC (where applicable). (D) Effective workload management: <ul style="list-style-type: none"> Prioritise attention properly between aircraft control, navigation and communication tasks. (E) Effective problem-solving and decision-making: <ul style="list-style-type: none"> Make the necessary decisions to mitigate the effect of changing conditions that may affect aircraft (weather, navigation aid serviceability, ATC, etc.).

Holding procedure

Common to both 3D and 2D procedures (must be performed by sole reference to instruments)	
Holding procedure	
OBJECTIVE	Complete the appropriate entry procedure followed by a standard ICAO holding fix, using information in order to maintain the protected area.
SKILL	<p>(A) Make appropriate adjustments in order to arrive over the holding fix as close as possible to the 'expected approach time', if required.</p> <p>(B) Recognise arrival at the clearance limit or holding fix.</p> <p>(C) Comply with ATC reporting requirements.</p> <p>(D) Change to the recommended holding airspeed appropriate for the aircraft and holding altitude, so as to cross the holding fix at or below the maximum holding airspeed.</p> <p>(E) Follow the appropriate entry procedures in accordance with standard operational procedures or as required by ATC.</p> <p>(F) Use the correct timing criteria where required by the holding procedure or ATC.</p> <p>(G) Use wind-drift correction techniques accurately to maintain the appropriate joining and holding pattern and to establish and maintain the correct tracks and bearings.</p> <p>(H) Maintain the appropriate airspeed, altitude and headings accurately to establish and maintain the correct tracks and bearings.</p> <p>(I) Make appropriate adjustments to the procedure timing to allow for the effects of known wind.</p>
KNOWLEDGE	<p>(A) Holding endurance, including but not necessarily limited to fuel on board.</p> <p>(B) Fuel flow while holding.</p> <p>(C) Fuel required to alternate, etc.</p>
ATTITUDE	<p>(A) Situation awareness: Establish communication with ATC on the correct frequencies and at the appropriate times.</p> <p>(B) Effective communication: (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile complies with the cleared holding pattern.</p> <p>(E) Effective problem-solving and decision-making: React to navigation errors or unexpected systems malfunctions.</p>

Setting and checking of navigation aids, identification of facilities

Module 2: 3D approach procedures (must be performed by sole reference to instruments)	
Setting and checking of navigation aids, identification of facilities	
OBJECTIVE	<p>(A) Use of navigation aids with regard to promulgated range, identification and interpretation.</p> <p>(B) Use the RAIM prediction, if applicable.</p> <p>(C) Use the correct RNP approach specifications (LPV, LNAV/VNAV).</p>
SKILL	<p>(A) Set and identify relevant navigation aids.</p> <p>(B) Confirm the availability and serviceability of selected navigation equipment.</p>
KNOWLEDGE	<p>(A) Systems: communication, navigation and auto-flight systems.</p> <p>(B) RNP approach specifications (LPV, LNAV/VNAV).</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) Select radio aids appropriate to the intended approach; (3) PBN limitations; (4) Temperature limitations (LNAV/VNAV). <p>(B) Effective workload management: Monitor to ensure safe flight profile whilst selecting and checking radio aids.</p> <p>(C) Effective communication:</p> <ol style="list-style-type: none"> (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. <p>(D) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(E) Effective problem-solving and decision-making: React to deviation errors or unexpected systems malfunctions.</p>

Arrival procedures, altimeter checks

Module 2: 3D approach procedures (must be performed by sole reference to instruments)	
Arrival procedures, altimeter checks	
OBJECTIVE	Descent planning and consideration of minimum sector altitude (MSA) or terminal arrival altitude (TAA). Completion of the published arrival procedure or as instructed by ATC, including altimeter setting or protected area, ATC liaison and RTF procedures.
SKILL	<p>(A) Set and cross-check the appropriate altimeter settings.</p> <p>(B) Use the correct RTF procedures and terminology and comply with all ATC instructions and clearances.</p> <p>(C) Establish the appropriate aircraft configuration and airspeed for the phase of the approach.</p> <p>(D) Comply with the published arrival procedure or as required by ATC.</p> <p>(E) Interpretation of arrival charts.</p>
KNOWLEDGE	<p>(A) Altimetry procedures in accordance with the applicable regulations.</p> <p>(B) Knowledge of legends used in the approach charts.</p> <p>(C) Understanding of ATC procedures and RTF phraseology for the type of approach to be completed.</p> <p>(D) Knowledge of RNP arrival procedure.</p>
ATTITUDE	<p>(A) Situation awareness: Establish communication with ATC on the correct frequencies and at the appropriate times.</p> <p>(B) Effective communication: <p>(1) Read back correctly, in a timely manner, the ATC clearance in the sequence received;</p> <p>(2) Communicate with ATC, as appropriate.</p> </p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile complies with the approach procedure.</p> <p>(E) Effective problem-solving and decision-making: react to deviation errors or unexpected systems malfunctions.</p>

Approach and landing briefing, including descent, approach, landing checks and missed approach

Module 2: 3D approach procedures (must be performed by sole reference to instruments)	
Approach and landing briefing, including descent, approach, landing checks and missed approach	
OBJECTIVE	The approach briefing including weather and confirmation of instrument approach procedure minima, and applicable procedures.
SKILL	<p>(A) Complete the checks for landing and configure the aircraft appropriately.</p> <p>(B) Complete a short self-briefing with regard to arrival, holding, approach, minima, weather conditions, associated performances, taxiing and missed approach procedure.</p>
KNOWLEDGE	<p>(A) Use of checklist as appropriate.</p> <p>(B) Determination of approach minima.</p> <p>(C) Make the necessary adjustments to the published approach minima criteria for the aircraft approach category, and with due regard for:</p> <ol style="list-style-type: none"> (1) NOTAMs; (2) inoperative navigation equipment; (3) inoperative visual aids associated with the landing environment; (4) reported weather conditions; (5) aircraft status (effects of any inoperative systems).
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) Aircraft technical status. <p>(B) Effective communication:</p> <ol style="list-style-type: none"> (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <p>Monitor to ensure that the flight profile complies with the approach procedure.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>React to deviation errors or unexpected systems malfunctions.</p>

Compliance with published approach procedure

Module 2: 3D approach procedures (must be performed by sole reference to instruments)	
Compliance with published approach procedure	
OBJECTIVE	<p>(A) Compliance with the published 3D approach procedure.</p> <p>(B) Vertical and horizontal profile to the nominated minima in accordance with protected areas.</p>
SKILL	<p>(A) Manage the appropriate source of navigation system.</p> <p>(B) Complete the manoeuvring pattern as required to establish the final approach segment within the specified flight tolerances.</p> <p>(C) Establish a predetermined rate of descent at the point where the glide path begins, in order to follow the glide path.</p> <p>(D) Intercept and track within the prescribed limits.</p> <p>(E) Interpretation of approach chart.</p>
KNOWLEDGE	<p>(A) Systems: communication, navigation and auto-flight systems.</p> <p>(B) Correctly interpret and understand the procedure to be flown from the approach chart for runway and procedure in use.</p> <p>(C) Autopilot and flight director limitations.</p> <p>(D) Software and capacity system.</p>
ATTITUDE	<p>(A) Situation awareness: Establish communication with ATC on the correct frequencies and at the appropriate times;</p> <p>(B) Effective communication: (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile complies with the cleared procedure.</p> <p>(E) Effective problem-solving and decision-making: React to navigation errors or unexpected systems malfunctions.</p>

Altitude, speed, heading control (stabilised approach)

Module 2: 3D approach procedures (must be performed by sole reference to instruments)	
Altitude, speed, heading control (stabilised approach)	
OBJECTIVE	<p>(A) Establish a stabilised approach, in trim for the aeroplane configuration and speed, using the correct techniques for attitude, heading and power control.</p> <p>(B) Correct assessment of track and vertical path.</p>
SKILL	<p>(A) Establish the final approach and maintain the approach path in horizontal and vertical profile to minima.</p> <p>(B) Control the aircraft as necessary to achieve a stable approach path.</p> <p>(C) Arrive at the minima on a stabilised approach in order to make a correct decision to perform a landing, go-around or circling approach safely.</p> <p>(D) Prepare backup radio aids for continued approach in the event of radio aid or display equipment failure.</p> <p>(E) Use correct RTF procedures and terminology and comply with all ATC instructions and clearances.</p>
KNOWLEDGE	<p>(A) Horizontal and vertical tolerances.</p> <p>(B) Actions to be taken in the event of radio aid or display equipment failure.</p> <p>(C) Procedure in the event of loss of communication with ATC.</p> <p>(D) Procedure in the event of loss of integrity.</p>
ATTITUDE	<p>(A) Situation awareness: Confirm that approach is stabilised.</p> <p>(B) Effective communication: Advise ATC if appropriate.</p> <p>(C) Leadership and teamwork: (1) Demonstrate correct coordination with ATC (where applicable); (2) Procedures for loss of approach capability.</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile remains safe.</p> <p>(E) Effective problem-solving and decision-making: Make appropriate decision to abandon approach if required.</p>

Setting and checking of navigation aids, identification of facilities

Module 2: 2D approach procedures (must be performed by sole reference to instruments)	
Setting and checking of navigation aids, identification of facilities	
OBJECTIVE	<p>(A) Use of navigation aids with regard to promulgated range, identification and interpretation.</p> <p>(B) Use the RAIM prediction, if applicable.</p> <p>(C) Use the correct RNP approach specifications.</p> <p>(D) Calculate the true altitude as required.</p>
SKILL	<p>(A) Set and identify relevant navigation aids.</p> <p>(B) Confirm the availability and serviceability of selected navigation equipment.</p>
KNOWLEDGE	<p>(A) Systems: communication, navigation and auto-flight systems.</p> <p>(B) RNP approach specifications (LNAV).</p> <p>(C) True altitude corrections for temperature.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Establish communication with ATC on the correct frequencies and at the appropriate times;</p> <p>(2) Select radio aids appropriate to the intended approach.</p> <p>(B) Effective workload management:</p> <p>Monitor to ensure safe flight profile whilst selecting and checking radio aids.</p> <p>(C) Effective communication:</p> <p>(1) Read back correctly, in a timely manner, the ATC clearance in the sequence received;</p> <p>(2) Communicate with ATC as appropriate.</p> <p>(D) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(E) Effective problem-solving and decision-making:</p> <p>React to deviation errors or unexpected systems malfunctions.</p>

Arrival procedures, altimeter checks

Module 2: 2D approach procedures (must be performed by sole reference to instruments)	
Arrival procedures, altimeter checks	
OBJECTIVE	<p>(A) Descent planning and consideration of MSA or TAA.</p> <p>(B) Completion of the published arrival procedure or as instructed by ATC, including altimeter setting or protected area, ATC liaison and RTF procedures.</p>
SKILL	<p>(A) Set and cross-check the appropriate altimeter settings.</p> <p>(B) Use the correct RTF procedures and terminology and comply with all ATC instructions and clearances.</p> <p>(C) Establish the appropriate aircraft configuration and airspeed for the phase of the approach.</p> <p>(D) Comply with the published arrival procedure or as required by ATC.</p> <p>(E) Interpretation of arrival charts.</p>
KNOWLEDGE	<p>(A) Altimetry procedures, in accordance with the applicable regulations.</p> <p>(B) Knowledge of the legends used in the approach charts.</p> <p>(C) Understanding of ATC procedures and RTF phraseology for the type of approach to be completed.</p> <p>(D) Knowledge of RNP arrival procedure.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) PBN protected area. <p>(B) Effective communication:</p> <ol style="list-style-type: none"> (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <p>Monitor to ensure that the flight profile complies with the approach procedure.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>React to deviation errors or unexpected systems malfunctions.</p>

Approach and landing briefing, including descent, approach, landing checks and missed approach

Module 2: 2D approach procedures (must be performed by sole reference to instruments)	
Approach and landing briefing, including descent, approach, landing checks and missed approach	
OBJECTIVE	The approach briefing including weather and confirmation of instrument approach procedure minima, and applicable procedures.
SKILL	<p>(A) Complete the landing and configure the aircraft as appropriate.</p> <p>(B) Complete a short self-briefing with regard to arrival, holding, approach, minima, weather conditions, associated performances, taxiing and missed approach procedure.</p>
KNOWLEDGE	<p>(A) Use of checklist as appropriate.</p> <p>(B) Determination of approach minima.</p> <p>(C) Adjustments necessary to the published approach minima criteria for the aircraft approach category, and with due regard for:</p> <ol style="list-style-type: none"> (1) NOTAMs; (2) inoperative navigation equipment; (3) inoperative visual aids associated with the landing environment; (4) reported weather conditions.
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) Aircraft technical status. <p>(B) Effective communication:</p> <ol style="list-style-type: none"> (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile complies with the approach procedure.</p> <p>(E) Effective problem-solving and decision-making: React to deviation errors or unexpected systems malfunctions.</p>

Compliance with published approach procedure

Module 2: 2D approach procedures (must be performed by sole reference to instruments)	
Compliance with published 2D approach procedure	
OBJECTIVE	(A) Compliance with the published approach procedure. (B) Vertical and horizontal profile to the nominated minima in accordance with protected areas. (C) Use of the CDFA technique where appropriate.
SKILL	(A) Manage the appropriate source of navigation system. (B) Select and comply with the appropriate 2D instrument approach procedure. (C) Complete the manoeuvring pattern as required to establish the final approach segment within the specified flight tolerances and protected area. (D) Establish a predetermined rate of descent in order to follow the published path. (E) Intercept and track the final approach track within the prescribed limits. (F) Interpretation of approach chart. (G) Ability to interpret deviation. (H) Correct selection of navigation input to the display.
KNOWLEDGE	(A) Systems: communication, navigation and auto-flight systems. (B) Correctly interpret and understand the procedure to be flown from the approach chart for runway and procedure in use. (C) CDFA technique where appropriate. (D) Autopilot and flight director limitations.
ATTITUDE	(A) Situation awareness: Establish communication with ATC on the correct frequencies and at the appropriate times; (B) Effective communication: (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. (C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable). (D) Effective workload management: Monitor to ensure that the flight profile complies with the cleared procedure. (E) Effective problem-solving and decision-making: React to navigation errors or unexpected systems malfunctions.

Altitude, speed and heading control (stabilised approach)

Module 2: 2D approach procedures (must be performed by sole reference to instruments)	
Altitude, speed and heading control (stabilised approach)	
OBJECTIVE	<p>(A) Establish a stabilised approach, in trim for the aeroplane configuration and speed, using the correct techniques for attitude, heading and power control.</p> <p>(B) Correct assessment of track and rate of descent or vertical path angle.</p>
SKILL	<p>(A) Establish the final approach and maintain the approach path in horizontal and vertical profile to minima.</p> <p>(B) Control the aircraft as necessary to achieve a stable final approach.</p> <p>(C) Arrive at the minima on a stabilised approach in order to make a correct decision to perform a landing, go-around or circling approach safely.</p> <p>(D) Prepare backup radio aids for continued approach in the event of radio aid or display equipment failure.</p> <p>(E) Use correct RTF procedures and terminology, and comply with all ATC instructions and clearances.</p>
KNOWLEDGE	<p>(A) Horizontal and vertical tolerances.</p> <p>(B) Actions to be taken in the event of radio aid/display equipment failure.</p> <p>(C) Procedure in the event of loss of communication with ATC.</p> <p>(D) Procedure in the event of loss of integrity.</p>
ATTITUDE	<p>(A) Situation awareness: Confirm that the approach is stabilised.</p> <p>(B) Effective communication: Advise ATC if appropriate.</p> <p>(C) Leadership and teamwork: (1) Demonstrate correct coordination with ATC (where applicable); (2) Procedures for loss-of-approach capability.</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile remains safe.</p> <p>(E) Effective problem-solving and decision-making: Make appropriate decision to abandon approach if required.</p>

Approach timing

Module 2: Specificities of conventional 2D approach procedures (must be performed by sole reference to instruments)	
Approach timing	
OBJECTIVE	Monitor or control the approach procedure using timing as necessary.
SKILL	Where DME information from ground-based beacons (VOR or NDB) or marker is not available, the applicant makes appropriate adjustments to the procedure timing to allow for the effects of known wind.
KNOWLEDGE	<p>(A) Use of wind-effect correction techniques.</p> <p>(B) Use of wind-drift correction techniques to maintain the correct tracks, bearings and approximate distances.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Understand when approach timing techniques are required;</p> <p>(2) Understand the impact required on the descent technique for the intermediate approach phase.</p> <p>(B) Effective workload management:</p> <p>Use an appropriate 'division of attention' whilst controlling the aircraft in order to apply wind-corrected timing.</p> <p>(C) Effective communication:</p> <p>As applicable to the specific situation.</p> <p>(D) Leadership and teamwork:</p> <p>As applicable to the specific situation.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>As applicable to the specific situation.</p>

Go-around and missed approach action

Module 2: Common to both 3D and 2D procedures (must be performed by sole reference to instruments)	
Go-around and missed approach action	
OBJECTIVE	<p>Make a smooth transition to a climb at the correct speed and complete the checks when:</p> <ol style="list-style-type: none"> (1) reaching the minima; (2) directed by ATC; (3) being in an unstabilised approach; (4) experiencing a loss of integrity; or (5) any other reasons affecting safety approach.
SKILL	<ol style="list-style-type: none"> (A) Initiate go-around action in case of unstabilised approach or loss of integrity. (B) Initiate go-around action at or above minima if safe landing is not possible. (C) Control the aircraft as necessary to achieve a stable and trimmed initial climb profile. (D) Ensure a safe climb and departure in accordance with ATC clearance and with due regard for other air traffic, noise abatement and wake turbulence avoidance procedures adjusting power and aircraft configuration, and maintain desired path (or heading) as appropriate. (E) Complete all necessary procedures and checks. (F) Select the missed approach if available.
KNOWLEDGE	<ol style="list-style-type: none"> (A) Go-around procedure. (B) Aircraft limitations for landing gear retraction, flap retraction and power plant. (C) Necessary RTF procedures. (D) Performance limitation. (E) Climb gradient. (F) Protected areas. (G) RNP approach specifications.
ATTITUDE	<ol style="list-style-type: none"> (A) Situation awareness: Monitor aircraft flight path at all stages of the go-around. (B) Effective communication: <ol style="list-style-type: none"> (1) Demonstrate effective communication (as applicable); (2) Communicate with ATC when safe to do so. (C) Leadership and teamwork: Demonstrate effective coordination with ATC (as applicable). (D) Effective problem-solving and decision-making: Correctly assess go-around and climb hazards, particularly those related to other aircraft, aerodrome infrastructure, obstacles and weather, and have a strategy to mitigate the threats.

Landing

Module 2: Common to both 3D and 2D procedures (must be performed by sole reference to instruments)	
Landing	
OBJECTIVE	<p>(A) Visual landing or circle for landing, as appropriate, in a safe and controlled manner.</p> <p>(B) Define a strategy for track management in case of missed approach or go-around in the circle to land.</p>
SKILL	<p>Landing:</p> <p>(A) acquire the required visual references and continue to land the aircraft;</p> <p>(B) make a smooth transition from instrument to visual flight;</p> <p>(C) join smoothly, if necessary, the visual approach flight path;</p> <p>(D) maintain a stable (speed, power, heading) approach until the flare;</p> <p>(E) complete post-landing checklist.</p>
KNOWLEDGE	<p>(A) Flight manual.</p> <p>(B) Limitations.</p> <p>(C) Normal procedures: Demonstrate adequate judgement and knowledge of the aircraft performance and systems in order to comply with published approach procedures for the equipment used for the approach.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) Controlled flight into terrain (CFIT); (3) Balked landing. <p>(B) Effective communication:</p> <ol style="list-style-type: none"> (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile complies with the approach procedure.</p> <p>(E) Effective problem-solving and decision-making: React to deviation errors or unexpected systems malfunctions.</p>

ATC liaison — compliance, RTF procedures

Module 2: Common to both 3D and 2D procedures (must be performed by sole reference to instruments)	
ATC liaison — compliance, RTF procedures	
OBJECTIVE	<p>(A) Use correct and standard RTF phraseology throughout.</p> <p>(B) Where appropriate, obtain ATC clearances and appropriate level of service.</p> <p>(C) Where required, comply with ATC clearances and instructions.</p>
SKILL	<p>(A) Comply with all ATC instructions and clearances.</p> <p>(B) Use correct RTF for ILS reporting procedure.</p>
KNOWLEDGE	<p>(A) ICAO standard phraseology.</p> <p>(B) Pilot/controller responsibilities to include tower en-route control and clearance.</p> <p>(C) Demonstrate adequate knowledge of two-way communications failure procedures.</p>
ATTITUDE	<p>(A) Situation awareness: Establish communication with ATC on the correct frequencies and at the appropriate times.</p> <p>(B) Effective communication: Read back correctly, in a timely manner, the ATC clearance in the sequence received.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Copy correctly, in a timely manner, the ATC clearance as issued.</p> <p>(E) Effective problem-solving and decision-making: Interpret correctly the ATC clearance received and, when necessary, request clarification, verification, or change.</p>

(3) Module 3: En-route IFR procedures

Use of air traffic services document and weather document

Module 3: En-route IFR procedures	
Use of air traffic services document and weather document	
OBJECTIVE	<p>(A) Use of the correct documents, including maps.</p> <p>(B) Use of charts and approach procedure plates to prepare flight plan and flight log.</p> <p>(C) Collating and interpreting weather documents to determine the route weather.</p>
SKILL	<p>(A) Ensure all required paperwork is correctly completed prior to the flight.</p> <p>(B) Interpretation of weather charts and coded messages (TAF, METAR, etc.).</p>
KNOWLEDGE	<p>(A) Weather factors that may affect the safe conduct of the flight (thunderstorms, fog, strong winds, gust factor, crosswinds at departure and destination aerodromes, snow, icing, etc.).</p> <p>(B) Type of approach to be flown, how to calculate approach minima from charts, operational limitations of ground-based aids when planning route, ability to interpret SID and STAR charts.</p> <p>(C) Coordination with ATC when submitting flight plan, implications of 'calculated take-off time', etc.</p>
ATTITUDE	<p>(A) Situation awareness: Note potential weather hazards and act accordingly, submit flight plan in good time for planned departure.</p> <p>(B) Effective communication: Communicate with ATC and ground crew to ensure timely start.</p> <p>(C) Leadership and teamwork: Demonstrate correct crew coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Prioritise tasks to produce a safe and effective plan for the conduct of the flight.</p> <p>(E) Effective problem-solving and decision-making: <ol style="list-style-type: none"> (1) Identify possible defects and threats; (2) Take corrective action. </p>

Preparation of ATC flight plan and IFR flight plan or log

Module 3: En-route IFR procedures	
Preparation of ATC flight plan and IFR flight plan or log	
OBJECTIVE	Preparation of the ATC IFR flight plan for the route, including any off-airway sectors, and preparation of a full navigation and RTF flight log.
SKILL	<p>(A) Prepare the flight navigation log, update maps and charts, flight plan, and fuel plan.</p> <p>(B) Obtain and assess all elements of the prevailing and forecast weather conditions for the route and evaluate threats (e.g. icing conditions, convection, wind conditions, potential deterioration below minima).</p> <p>(C) Complete an appropriate flight navigation log.</p> <p>(D) Complete the required ATC flight plan(s) and ensure that all required airfields are addressed.</p> <p>(E) Determine that the aeroplane is correctly fuelled, loaded and legal for the flight.</p> <p>(F) Confirm any aeroplane performance criteria and limitations applicable in relation to runway and weather conditions.</p>
KNOWLEDGE	Demonstrate sufficient knowledge of the regulatory requirements relating to instrument flight.
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Understand the responsibilities of proper pre-departure planning and preparations;</p> <p>(2) Appropriate threat and error management for the flight</p> <p>(B) Effective communication:</p> <p>Ensure appropriate and clear communication with all ground service personnel (ATC, dispatch, MET).</p> <p>(C) Leadership and teamwork.</p> <p>(D) Effective workload management:</p> <p>Provide sufficient time, and manage the workload for departure procedures (including documentation) to be completed in an efficient manner.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>Make appropriate decisions on all identified threats, and plan and implement suitable mitigation actions.</p>

Tracking, including interception, e.g. NDB, VOR, RNAV

Module 3: En-route IFR procedures	
Tracking, including interception, e.g. NDB, VOR, RNAV	
OBJECTIVE	<p>(A) Intercept and maintain the route or amended route, including tracking to and from a position derived from NDB or VOR or RNAV (GNSS) using aircraft display.</p> <p>(B) Follow the flight-planned route or any other ATC route requirements within the specified limits.</p> <p>(C) Identify and use navigation systems correctly.</p> <p>(D) Use the correct altimeter setting procedures and show awareness of protected areas.</p>
SKILL	<p>(A) Use the current and appropriate navigation publications for the proposed flight.</p> <p>(B) Intercept, in a timely manner, all courses, radials and bearings appropriate to the procedure, route, and ATC clearance.</p> <p>(C) Comply, in a timely manner, with all ATC clearances, instructions and restrictions.</p> <p>(D) Perform the aircraft briefing or checklist items appropriate to the arrival.</p> <p>(E) Adhere to airspeed restrictions and adjustments required by regulations, ATC and aircraft flight manual.</p> <p>(F) Maintain the appropriate airspeed, altitude and heading, and accurately track radials, courses and bearing (QDM/QDRs).</p>
KNOWLEDGE	<p>(A) Basic instrument rating knowledge.</p> <p>(B) Proper ATC phraseology.</p> <p>(C) Demonstrate adequate knowledge of:</p> <ol style="list-style-type: none"> (1) flight manual; (2) limitations; (3) instrument patterns; (4) two-way communications failure procedures. <p>(D) Systems: communication, navigation and auto-flight systems.</p> <p>(E) PBN specifications.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) Awareness of aircraft position in space. <p>(B) Effective communication:</p> <ol style="list-style-type: none"> (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Communicate with ATC as appropriate. <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Monitor to ensure that the flight profile complies with the cleared en-route routing.</p> <p>(E) Effective problem-solving and decision-making: React to navigation errors or unexpected systems malfunctions.</p>

Use of radio aids

Module 3: En-route IFR procedures (must be performed by sole reference to instruments)	
Use of radio aids	
OBJECTIVE	<p>(A) Correct use of RNAV system and radio aids with regard to promulgated range, identification and interpretation.</p> <p>(B) Use of ATIS/VOLMET where available.</p>
SKILL	<p>(A) Use the current and appropriate navigation publications for the proposed flight.</p> <p>(B) Select a combination of radio aids that allow the aircraft position to be correctly determined.</p> <p>(C) Manage the display of such aids so that the navigational information is readily available.</p> <p>(D) Correctly identify the chosen radio aids using Morse code where appropriate, i.e. when there is no 'auto-ident'.</p> <p>(E) Correctly assess the functionality of radio aids, including RNAV, before using them for navigation.</p> <p>(F) Correctly check receiver autonomous integrity monitoring (RAIM) of GNSS systems, if applicable.</p> <p>(G) Correctly input navigation planning data into the GNSS system where appropriate.</p>
KNOWLEDGE	<p>(A) Demonstrate the theoretical knowledge and understanding of:</p> <ol style="list-style-type: none"> (1) the limitations and errors of VOR and NDB, the limitations and errors of VOR and NDB receivers in the aircraft, and the resulting potential navigational error; (2) information pertinent to radio aids or RNAV operations contained in NOTAMs; (3) correct identification of ground-based radio aids; (4) the radio aid equipment and associated displays fitted to the aircraft. <p>(B) Identify when a ground-based radio aid is radiating but the signal is not available for navigation.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Monitor flight progress and select the appropriate navigation systems to enable successful completion of the planned route; (2) Awareness of aircraft position in space. <p>(B) Effective communication: As applicable to the specific situation.</p> <p>(C) Leadership and teamwork: As applicable to the specific situation.</p> <p>(D) Effective workload management: Use an appropriate 'division of attention' appropriately whilst controlling the aircraft and reset navigation aids.</p> <p>(E) Effective problem-solving and decision-making: React to navigation errors or unexpected systems malfunctions.</p>

Level flight, control of heading, attitude and airspeed, power-setting, trim technique

Module 3: En-route IFR procedures	
Level flight, control of heading, attitude and airspeed, power-setting, trim technique	
OBJECTIVE	<p>(A) Smooth control of heading, attitude and airspeed, power, trim and ancillary controls.</p> <p>(B) Correct use of autopilot where appropriate.</p> <p>(C) Demonstrate correct technique for instrument flight manoeuvring within specified limits.</p> <p>(D) Maintain balanced and trimmed flight.</p>
SKILL	<p>(A) Maintain altitude, heading and balance, by sole reference to instruments, using correct instrument confirmation, and coordinated control application.</p> <p>(B) Maintain altitude, heading and balance, whilst accelerating or decelerating to specific speeds, as determined by the aircraft flight manual.</p> <p>(C) Demonstrate correct procedure for pre-flight functional check of autopilot, flight director and aircraft navigation system, as applicable.</p> <p>(D) Demonstrate correct operating procedure for aircraft navigation systems, autopilot or flight director in all modes.</p>
KNOWLEDGE	<p>(A) Procedures for controlling the aircraft in accordance with the aircraft flight manual and flight manual, as appropriate.</p> <p>(B) Autopilot, flight director and navigation system fitted to the aircraft.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Maintain awareness of the autopilot modes selected, where applicable; (2) Understand the need for trimmed, in-balance flight when manually flying the aircraft; (3) Maintain adequate scan rate before, during and after execution of any manoeuvre by reference to instruments and autopilot performance. <p>(B) Effective communication: As applicable to the specific situation.</p> <p>(C) Leadership and teamwork: As applicable to the specific situation.</p> <p>(D) Effective workload management: Use an appropriate 'division of attention' when completing flight log, etc., whilst manually controlling the aircraft.</p> <p>(E) Effective problem-solving and decision-making: Prioritise activities to allow maintenance of correct instrument scan.</p>

Altimeter setting

Module 3: En-route IFR procedures	
Altimeter setting	
OBJECTIVE	Follow the altimeter-setting procedure, and cross-check and monitor en-route protected areas.
SKILL	(A) Correct use and interpretation of altimeter subscale setting. (B) Cross-check against a second altimeter.
KNOWLEDGE	(A) National procedures, if different, regarding altimeter settings for the airspace the aircraft is occupying. (B) Effects of extremely low temperatures on altimeter indications. (C) Limitations and errors in altimeters due to construction or systems installed in the aircraft, etc.
ATTITUDE	(A) Situation awareness: (1) Understand the airspace structure and make appropriate altimeter settings; (2) Be aware of minimum safe altitude, sector safe altitude, etc. (B) Effective workload management: As applicable to the specific situation. (C) Effective communication: Use appropriate RTF procedures to update pressure settings. (D) Leadership and teamwork: As applicable to the specific situation. (E) Effective problem-solving and decision-making: Where necessary, identify and make appropriate decisions when confronted with system failures.

Timing and revision of estimated time of arrival (ETA) (en-route hold, if required)

Module 3: En-route IFR procedures	
Timing and revision of estimated time of arrival (ETA) (en-route hold, if required)	
OBJECTIVE	Understand the flight plan, and that the clearance is to be completed correctly.
SKILL	(A) Use appropriate and up-to-date aeronautical charts. (B) Extract and record pertinent information from NOTAMs, the aerodrome or facility directory, and other flight publications. (C) Plot a course for the intended route of flight. (D) Select the most favourable altitudes. (E) Compute headings, flight time, and fuel requirements.
KNOWLEDGE	(A) Weather reports and forecasts. (B) Pilot and radar reports. (C) Winds and temperatures aloft. (D) ATC procedures related to timing, e.g. update of ETA if changed by ± 3 minutes, clearance limit, etc.
ATTITUDE	(A) Situation awareness: (1) Establish communication with ATC on the correct frequencies and at the appropriate times; (2) Identify airspace, obstructions, and terrain features. (B) Effective communication: (1) Read back correctly, in a timely manner, the ATC clearance in the sequence received; (2) Demonstrate correct communication with ATC (where applicable). (C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable). (D) Effective workload management: Select the appropriate navigation systems or facilities and communication frequencies. (E) Effective problem-solving and decision-making: Deal with unexpected navigation errors or systems malfunctions.

Monitoring of flight progress, flight log, fuel usage and management, systems management

Module 3: En-route IFR procedures	
Monitoring of flight progress, flight log, fuel usage and management, systems management	
OBJECTIVE	<p>(A) Maintain a flight log by recording sufficient information.</p> <p>(B) Monitor the engine and aircraft systems throughout the flight.</p> <p>(C) Monitor fuel consumption versus fuel available and fuel required throughout the flight.</p>
SKILL	<p>(A) Follow the flight plan route in accordance with ATC.</p> <p>(B) Navigate by means of an appropriate navigation system for the cleared route.</p> <p>(C) Use the correct altimetry procedures.</p> <p>(D) Verify the aircraft's position in relation to the flight-planned route.</p> <p>(E) Correctly assess track error and make suitable adjustments to heading.</p> <p>(F) Correct and record the differences between pre-flight fuel, ground speed, and heading and time calculations and those determined en-route.</p> <p>(G) Complete all appropriate checklists.</p> <p>(H) Manage the flight in accordance with minimum altitude.</p>
KNOWLEDGE	<p>(A) Part-SERA requirements and national rules regarding use of aerodromes procedures.</p> <p>(B) Policy concerning IFR flights (e.g. national procedures in the AIP).</p> <p>(C) Services expected in different classes of airspace.</p> <p>(D) Danger restricted, and prohibited areas.</p> <p>(E) Minimum altitude and protected areas.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Establish communication with ATC on the correct frequencies and at the appropriate times;</p> <p>(2) Identify airspace and minimum altitudes.</p> <p>(B) Effective communication:</p> <p>(1) Read back correctly, in a timely manner, the ATC clearance in the sequence received;</p> <p>(2) Demonstrate correct communication (where applicable).</p> <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <p>Select appropriate navigation systems or facilities and communication frequencies.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>Deal with unexpected navigation errors or systems malfunctions.</p>

Ice protection procedures, simulated if necessary

Module 3: En-route IFR procedures	
Ice protection procedures, simulated if necessary	
OBJECTIVE	<p>(A) Monitoring of outside air temperature (OAT), icing risk and ice accretion rate (on FSTD if necessary); correct use of anti-icing and de-icing procedures.</p> <p>(B) Manage flight in icing conditions.</p>
SKILL	<p>(A) Assessment of ice accretion on aircraft.</p> <p>(B) Appropriate selection of anti-icing or de-icing systems.</p> <p>(C) Adapt the aircraft speed to stay within the flight manual limitations, if any.</p> <p>(D) Adapt the performance within the icing conditions.</p> <p>(E) Decision-making to avoid icing conditions.</p>
KNOWLEDGE	<p>(A) Weather reports and forecasts.</p> <p>(B) ATC, pilot and radar reports.</p> <p>(C) Surface analysis charts.</p> <p>(D) Ground radar summary charts.</p> <p>(E) Significant weather prognostics.</p> <p>(F) Forecast upper wind and temperature for aviation (WINTeM).</p> <p>(G) Freezing level.</p> <p>(H) SIGMETs.</p> <p>(I) ATIS and VOLMET reports.</p> <p>(J) Aircraft anti-icing and de-icing system limitations.</p> <p>(K) Significant weather chart (TEMSe).</p>
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Understand the environmental conditions which can lead to the formation of ice on the aircraft;</p> <p>(2) Assess when ice accretion is outside the capability of the aircraft systems.</p> <p>(B) Effective communication:</p> <p>(1) Liaise with ATC to avoid known icing conditions;</p> <p>(2) Request change of route or level to avoid icing conditions.</p> <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <p>Select appropriate navigation systems or facilities and communication frequencies.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>(1) Deal with unexpected encounters with icing conditions or systems malfunctions;</p> <p>(2) Seek reroute or change of level in a timely manner.</p>

ATC liaison — compliance, RTF procedures

Module 3: En-route IFR procedures	
ATC liaison — compliance, RTF procedures	
OBJECTIVE	ATC liaison using the correct RTF procedures and phraseology, and compliance with ATC procedures and clearances.
SKILL	<p>(A) Follow the flight-planned route or any other ATC route requirements within the specified operating limits.</p> <p>(B) Identify and use navigation systems correctly.</p> <p>(C) Monitor whether ATC clearance is in accordance with a safe flight.</p> <p>(D) Use the correct RTF procedures and phraseology.</p>
KNOWLEDGE	ICAO (language proficiency level 4, as a minimum) and national RTF procedures.
ATTITUDE	<p>(A) Situation awareness:</p> <p>(1) Establish communication with ATC on the correct frequencies and at the appropriate times;</p> <p>(2) Identify airspace, and understand ATC clearances.</p> <p>(B) Effective communication:</p> <p>(1) Read back correctly, in a timely manner, the ATC clearance in the sequence received;</p> <p>(2) Demonstrate correct communication with ATC (where applicable).</p> <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <p>Select the appropriate navigation systems or facilities and communication frequencies.</p> <p>(E) Effective problem-solving and decision-making:</p> <p>Deal with unexpected navigation errors or systems malfunctions.</p>

(4) Module 4: Optional flight with one engine inoperative (multi-engine aeroplanes only)

Simulated engine failure after take-off or during go-around

Module 4: Optional flight with one engine inoperative (multi-engine aeroplanes only) (must be performed by sole reference to instruments) (Multi-engine aeroplanes only)	
Simulated engine failure after take-off or during go-around (at a safe altitude unless conducted in an adapted FSTD)	
OBJECTIVE	<p>(A) Maintain the flight path after take-off or during go-around with one engine inoperative.</p> <p>(B) Comply with ATC instructions.</p>
SKILL	<p>(A) Maintain control following engine failure with sole reference to instruments.</p> <p>(B) Prepare a strategy in case of engine failure or go-around.</p> <p>(C) Calculate one-engine-inoperative performance.</p> <p>(D) Adapt minima on take-off or in approach in accordance with the performance.</p> <p>(E) Carry out the recommended emergency procedures.</p>
KNOWLEDGE	<p>(A) Operating manual:</p> <ol style="list-style-type: none"> (1) all systems; (2) limitations; (3) abnormal procedures; (4) Part-NCO; (5) performance; (6) CS-23. <p>(B) Operator policy dedicated to failure during take-off: in particular, operator engine-out path during take-off.</p>
ATTITUDE	<p>(A) Situation awareness:</p> <ol style="list-style-type: none"> (1) Recognise engine failure, and confirm correct engine; (2) Performance limitations; (3) Strategy threats. <p>(B) Effective communication:</p> <p>Communicate appropriately with ATC.</p> <p>(C) Leadership and teamwork:</p> <p>Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management:</p> <ol style="list-style-type: none"> (1) Apply appropriate abnormal or emergency procedures, time permitting, to resolve reason for engine failure; (2) Management of flight path close to the ground. <p>(E) Effective problem-solving and decision-making:</p> <p>Identify critical situation and make timely decision on suitable actions to carry out a safe asymmetric flight path.</p>

Approach, go-around and procedural missed approach with one engine inoperative

Module 4: Optional flight with one engine inoperative (multi-engine aeroplanes only) (must be performed by sole reference to instruments) (Multi-engine aeroplanes only)	
Approach, go-around and procedural missed approach with one engine inoperative	
OBJECTIVE	<p>(A) Manage IFR approach path during engine failure.</p> <p>(B) Maintain a stable approach in the correct configuration.</p> <p>(C) Make a clear decision to land or go around no later than the appropriate committal height or minima.</p> <p>(D) Complete asymmetric approach and go-around into visual circuit, circling approach or further instrument approach, maintaining control and correct speeds.</p> <p>(E) Initiate go-around action in case of destabilised approach.</p> <p>(F) Complete procedures and checks.</p>
SKILL	<p>(A) Apply the appropriate power setting for the flight condition and establish a pitch attitude necessary to achieve the desired performance.</p> <p>(B) Retract the wing flaps or drag devices and landing gear, if appropriate, in the correct sequence.</p> <p>(C) Accomplish the appropriate procedures or checklist items in a timely manner in accordance with the flight manual.</p>
KNOWLEDGE	<p>(A) Flight manual:</p> <ul style="list-style-type: none"> (1) all systems; (2) limitations; (3) abnormal procedures; (4) patterns; (5) Part-NCO; (6) performance; (7) CS-23. <p>(B) Operator policy dedicated to approach stabilisation criteria.</p>
ATTITUDE	<p>(A) Situation awareness: Recognise whether the approach profile is stabilised.</p> <p>(B) Effective communication: Communicate appropriately with ATC.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Apply appropriate abnormal procedures for asymmetric approach and go-around.</p> <p>(E) Effective problem-solving and decision-making:</p> <ul style="list-style-type: none"> (1) Identify whether a critical situation is occurring due to inappropriate approach profile; (2) Make a timely decision to execute a go-around.

Approach and landing with one engine inoperative

Module 4: Optional flight with one engine inoperative (multi-engine aeroplanes only) (must be performed by sole reference to instruments) (Multi-engine aeroplanes only)	
Approach and landing with one engine inoperative	
OBJECTIVE	<p>(A) Establish the approach and landing configuration appropriate for the selected runway and prevailing meteorological conditions, and adjust the engine controls as required.</p> <p>(B) Complete the applicable pre-landing checklist.</p> <p>(C) Maintain a stabilised approach at the desired airspeed.</p> <p>(D) Maintain the operating engine(s) within acceptable operating limits.</p> <p>(E) Accomplish a smooth, positively controlled transition from instrument reference to visual reference.</p> <p>(F) Join smoothly, if necessary, the visual approach flight path.</p> <p>(G) Complete the applicable post-landing briefing or checklist items in a timely manner, after clearing the runway, and as recommended by the manufacturer.</p>
SKILL	<p>(A) Consider the actual weather and wind conditions, landing surface and obstructions.</p> <p>(B) Maintain a stable approach in the correct configuration.</p> <p>(C) Plan and follow suitable approach pattern and orientation with the landing runway.</p> <p>(D) Establish the correct approach configuration, adjusting speed and rate of descent to maintain a stabilised approach path.</p> <p>(E) Make a clear decision to land or go around no later than the appropriate committal height or minima.</p> <p>(F) Select and achieve the appropriate touchdown area at the required speed.</p>
KNOWLEDGE	<p>(A) Flight manual:</p> <ul style="list-style-type: none"> (1) all systems; (2) limitations; (3) abnormal procedures; (4) patterns; (5) Part-NCO; (6) performance; (7) CS-23. <p>(B) Understand the factors affecting asymmetric committal height/altitude (ACH/A).</p>
ATTITUDE	<p>(A) Situation awareness: Recognise whether the approach profile is stabilised, leading to a safe asymmetric landing.</p> <p>(B) Effective communication: Liaise with ATC.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Apply appropriate abnormal procedures for asymmetric approach and landing.</p> <p>(E) Effective problem-solving and decision-making: Make appropriate decision at asymmetric committal height (ACH) to commit to final flap selection and landing.</p>

ATC liaison — compliance, RTF procedures

Module 4: Optional flight with one engine inoperative (multi-engine aeroplanes only) (must be performed by sole reference to instruments) (Multi-engine aeroplanes only)	
ATC liaison — compliance, RTF procedures	
OBJECTIVE	<p>(A) Inform ATC of abnormal flight condition and any assistance required.</p> <p>(B) Comply with ATC procedures and instructions.</p>
SKILL	<p>(A) Use standard RTF phraseology as far as possible and plain language as required when declaring an emergency.</p> <p>(B) Seek assistance as appropriate.</p>
KNOWLEDGE	<p>ICAO (language proficiency level 4 or higher) standard phraseology.</p>
ATTITUDE	<p>(A) Situation awareness: Communicate with ATC that an emergency has occurred.</p> <p>(B) Effective communication: Read back correctly, in a timely manner, the ATC clearance in the sequence received.</p> <p>(C) Leadership and teamwork: Demonstrate correct coordination with ATC (where applicable).</p> <p>(D) Effective workload management: Copy correctly, in a timely manner, the ATC clearance as issued.</p> <p>(E) Effective problem-solving and decision-making: Interpret correctly the ATC clearance received and ensure that it is compliant with aircraft in an asymmetric configuration.</p>