

## Annex I to ED Decision 2018/001/R

### ‘Acceptable Means of Compliance (AMCs) and Guidance Material (GM) to Part-FCL Amendment 4’

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 grey;
- (c) an ellipsis ‘[...]’ indicates that the rest of the text is unchanged.

#### 1. New AMC1 to FCL.025(a)(2) is inserted:

##### ‘AMC1 FCL.025(a)(2) Theoretical knowledge examinations for the issue of licences and ratings

###### COMPLETION OF THE AREA 100 KSA ASSESSMENT BEFORE FINAL EXAMINATION

Before being recommended by an ATO to sit the final examination paper at the first attempt, an applicant for a professional licence should have successfully completed the applicable Area 100 KSA summative assessments and mental maths test at the ATO.’

#### 2. AMC1 FCL.310; FCL.515(b); FCL.615(b) is amended as follows:

The table of contents and all tables are deleted and replaced by the following:

##### ‘AMC1 FCL.310; FCL.515(b); FCL.615(b) Theoretical knowledge examinations

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

- (a) Aeroplanes and helicopters

###### GENERAL

In the tables of this AMC, the applicable LOs for each licence or rating are marked with an ‘X’.

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 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), and FCL.615(b).

**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 an 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:

<b>Reference</b>	<b>Legislation/Standard</b>
The Basic Regulation	Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 (as amended)
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, CS-25, CS-27, CS-29, CS-E and CS-Definitions	Refer to the CS parts in Book 1 of the correspondingly numbered EASA Certification Specifications
AMC-23, AMC-25, etc.	Refer to the AMC parts in Book 2 of the correspondingly numbered EASA Certification Specifications
Single European Sky Regulations	<p>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)</p> <p>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)</p> <p>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)</p> <p>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</p>

	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	<i>Refers to correspondingly numbered documents:</i> 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' means Annexes I, II, III, IV and V to Commission Regulation (EU) No 965/2012 of 5 October 2012 (as amended).

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, in front of 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 EIR

### 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 EIR.

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 (RESERVED)
- Appendix AREA 100 KNOWLEDGE, SKILLS AND ATTITUDES (KSA)

**3. New GM1 to FCL.310; FCL.515(b); FCL.615(b) is inserted:**

**‘GM1 FCL.310; FCL.515(b); FCL.615(b) Theoretical knowledge examinations**

**EXPLANATION OF THE VERBS USED IN THE BENJAMIN BLOOM TAXONOMY**

- (a) The depth or level of learning to be achieved during the training and the corresponding level of attainment to be examined or assessed is based on the following taxonomy. In each case, the level of knowledge or skill is signified by the learning objective (LO) verb.
- (b) The majority of the LOs relate to the cognitive domain. The taxonomy described by B. Bloom (1956) and Anderson & Krathwohl (2001) has been used as the standard.
- (c) The six sequential increasing levels of required cognitive learning are identified by the LO verb. Hence the lowest level ‘remember’ is signified by verbs such as ‘state’, ‘list’, ‘define’ and ‘recall’ whilst the next higher level of ‘understand’ is signified by verbs such as ‘describe’ and ‘explain’. The third level of ‘apply’ is signified by the verbs ‘calculate’, ‘interpret’, ‘relate’ and ‘solve’. However, the higher levels of ‘analyse’, which would be signified by the verbs ‘plan’ or ‘discuss’ and ‘evaluate’ and ‘create’ are less common due at least partially to questions presently possible in the ECQB examination.
- (d) The LOs used in Area 100 KSA differ in that they require a combination of knowledge and skills. However, the ‘skill’ level does not relate to Bloom’s psychomotor taxonomy but is more closely aligned to the higher taxonomy levels required in medicine, because knowledge and skills must be combined by the student pilot in a strategy.
- (e) The verbs ‘demonstrate’ and ‘show’, with their meanings defined below, have therefore been used to supplement the cognitive LO verbs for the Area 100 KSA LOs.
- (1) ‘Demonstrate’ means the selection and use of the appropriate knowledge, skills and attitudes within a strategy to achieve an effective outcome. It signifies a high taxonomy level and would normally be assessed using multiple indicators from more than one core competency.
  - (2) ‘Show’ means the attainment of knowledge, skill or attitude. It signifies a lower taxonomy level than ‘demonstrate’ and would normally be assessed by a single indicator.’

4. **AMC1 FCL.615(b) 'IR — Theoretical knowledge and flight instruction' is amended as follows:**

**'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

- (a) ~~The following tables contain the detailed theoretical knowledge syllabus for the IR following the competency-based modular route (IR(A)) and the EIR.~~ 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) should be used for the CB-IR(A) and the EIR respectively.
- (b) Aspects related to threat and error management (TEM) ~~non-technical skills~~ 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 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 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 a competency-based IR(A) according to Annex 6 Section Aa.

<b>010-00-00-00</b>	<b>AIR LAW</b>
010-04-00-00	PERSONNEL LICENSING
010-05-00-00	RULES OF THE AIR
010-06-00-00	PROCEDURES FOR AIR NAVIGATION SERVICES — AIRCRAFT OPERATIONS (PANS OPS)
010-07-00-00	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT
010-08-00-00	AERONAUTICAL INFORMATION SERVICE
010-09-00-00	AERODROMES (ICAO Annex 14, Volume I, Aerodrome Design and Operations)
<b>022-00-00-00</b>	<b>AIRCRAFT GENERAL KNOWLEDGE — INSTRUMENTATION</b>
022-02-00-00	MEASUREMENT OF AIR DATA PARAMETERS
022-04-00-00	GYROSCOPIC INSTRUMENTS
022-13-00-00	INTEGRATED INSTRUMENTS — ELECTRONIC DISPLAYS
<b>033-00-00-00</b>	<b>FLIGHT PLANNING AND MONITORING</b>
033-02-00-00	FLIGHT PLANNING FOR IFR FLIGHTS
033-03-00-00	FUEL PLANNING
033-04-00-00	PRE-FLIGHT PREPARATION
033-05-00-00	ICAO FLIGHT PLAN (ATS FLIGHT PLAN)
<b>040-00-00-00</b>	<b>HUMAN PERFORMANCE</b>
040-01-00-00	HUMAN FACTORS: BASIC CONCEPTS
040-02-00-00	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE
040-03-00-00	BASIC AVIATION PSYCHOLOGY

<b>050-00-00-00</b>	<b>METEOROLOGY</b>
050-01-00-00	THE ATMOSPHERE
050-02-00-00	WIND
050-03-00-00	THERMODYNAMICS
050-04-00-00	CLOUDS AND FOG
050-05-00-00	PRECIPITATION
050-06-00-00	AIR MASSES AND FRONTS
050-07-00-00	PRESSURE SYSTEMS
050-08-00-00	CLIMATOLOGY
050-09-00-00	FLIGHT HAZARDS
050-10-00-00	METEOROLOGICAL INFORMATION
<b>062-00-00-00</b>	<b>RADIO NAVIGATION</b>
062-02-00-00	RADIO AIDS
062-03-00-00	RADAR
062-05-00-00	AREA NAVIGATION SYSTEMS, RNAV/FMS
<b>092-00-00-00</b>	<b>IFR COMMUNICATIONS</b>
092-01-00-00	DEFINITIONS
092-02-00-00	GENERAL OPERATING PROCEDURES
092-03-00-00	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE
092-04-00-00	DISTRESS AND URGENCY PROCEDURES
092-05-00-00	RELEVANT WEATHER INFORMATION TERM
092-06-00-00	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES
092-07-00-00	MORSE CODE'

5. **AMC2 FCL.615(b) to AMC8 FCL.615(b) 'IR — Theoretical knowledge and flight instruction' are deleted:**

**~~'AMC2 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject Air Law (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument rating (EIR) course according to FCL.825)~~

~~[...]~~

**~~'AMC3 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject Aircraft General Knowledge — Instrumentation (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument rating (EIR) course according to FCL.825)~~

~~[...]~~

**~~'AMC4 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject Flight Planning and Flight Monitoring (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument (EIR) rating course according to FCL.825)~~

[...]

**~~'AMC5 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject Human Performance (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument rating (EIR) course according to FCL.825)~~

[...]

**~~'AMC6 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject Meteorology (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument rating (EIR) course according to FCL.825)~~

[...]

**~~'AMC7 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject Radio Navigation (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument rating (EIR) course according to FCL.825)~~

[...]

**~~'AMC8 FCL.615(b) IR — Theoretical knowledge and flight instruction~~**

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES~~

~~Subject IFR Communications (Competency-based modular training course (CBIR(A)) for instrument rating according to Appendix 6 Aa and en route instrument rating (EIR) course according to FCL.825)~~

[...]

**6. GM1 FCL.615(b) 'IR — Theoretical knowledge and flight instruction' is deleted:**

~~'GM1 FCL.615(b) IR — Theoretical knowledge and flight instruction~~

~~DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES FOR THE EIR AND CBIR(A)~~

[...]

**7. AMC1 FCL.720.A(b)(2)(i) 'Experience requirements and prerequisites for the issue of class or type ratings — aeroplanes' is amended as follows:**

**'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

[...]

COURSE SYLLABUS

(c) The course will be divided in a VFR and an IFR part, and should cover at least the following items of the aeroplane syllabus to the ATPL(A) level:

FOR VFR OPERATIONS:

Subject rRef.:	Syllabus cContent:
021 00 00 00	AIRCRAFT GENERAL KNOWLEGDE: AIRFRAME, AND SYSTEMS, AND ELECTRICS, POWERPLANT PLANT AND EMERGENCY EQUIPMENT
021 02 02 01 to	Alternating current: general

021 02 02 03	Generators
021 09 01 03	AC power distribution
021 09 03 00	Alternating current
021 09 03 02	Generation
021 09 03 03	AC generation
021 09 04 00	Constant speed drive (CSD) and integrated drive generator (IDG) systems
021 09 04 01	Distribution
021 09 04 03	General
021 09 04 04	AC distribution
021 09 04 04	Electrical load management and monitoring systems: automatic generators and bus switching during normal and failure operation, indications and warnings
021 01 08 03	Pressurisation (Air driven systems – piston engines)
021 06 01 01	Piston-engine air supply
021 01 09 04	Pressurisation (Air driven systems – turbojet and turbo-propeller)
021 06 01 02	Gas turbine engine: bleed-air supply
021 03 01 06	Engine performance – piston engines
021 10 10 01	Performance
021 03 01 07	Power augmentation (turbo or supercharging)
021 11 03 01	Engine fuel system
021 03 01 08	Fuel
021 10 04 01	Carburettor: design, operation, degraded modes of operation, indications and warnings
021 03 01 09	Mixture
021 03 02 00 to 021 03 04 09	Turbine engines
021 11 00 00 to 021 11 01 04	
021 04 05 00	Aircraft oxygen equipment
021 13 00 00	Oxygen systems
<b>032 03 00 00</b>	<b>Performance class B: ME aeroplanes</b>
032 03 01 00 to 032 03 04 01	Performance of ME aeroplanes not certificated under CS and FAR 25: entire subject
032 03 03 01	Take-off
032 03 03 02	Climb
032 03 03 04	Landing
032 01 03 00	Level flight, range and endurance
032 01 04 00	Climbing
032 01 05 00	Descending
032 02 04 00	Climb, cruise and descent
<b>040 00 00 00</b>	<b>HUMAN PERFORMANCE</b>
040 02 01 00 to 040 02 01 03	Basic human physiology and High-altitude environment
<b>050 00 00 00</b>	<b>METEOROLOGY</b>
050 02 07 00 to 050 02 08 01	Jet streams CAT
050 02 05 00	Standing waves

050 09 01 00 to 050 09 04 05	Flight hazards Icing and turbulence Thunderstorms
<del>062 02 00 00</del> <del>062 03 00 00</del>	<b>Basic radar principles</b>
<del>062 02 01 00 to</del> <del>062 02 05 00</del> <del>062 03 00 01 to</del> <del>062 03 04 00</del>	Basic radar principles Airborne radar SSR
<b>081 00 00 00</b>	<b>PRINCIPLES OF FLIGHT: AEROPLANES</b>
<del>081 02 01 00</del> to <del>081 02 03 02</del> <del>081 02 01 00</del> <del>081 02 02 00</del> <del>081 02 03 00</del>	Transonic aerodynamics: entire subject Mach number or shockwaves buffet margin or aerodynamic ceiling Speeds Shock waves Effects of exceeding $M_{CRIT}$

## FOR IFR OPERATIONS

<b>Subject Ref.:</b>	<b>Syllabus Content:</b>
<b>010 00 00 00</b>	<b>AIR LAW</b>
010 06 07 00	Simultaneous operation on parallel or near-parallel instrument Runways
010 06 08 00	Secondary surveillance radar (transponder) operating procedures
<del>010 09 08 02</del> <b>022 00 00 00</b>	Radio altimeter operating areas <b>AIRCRAFT GENERAL KNOWLEDGE — INSTRUMENTATION</b>
<del>022 02 02 02</del> <del>022 01 02 00</del>	Temperature measurement — Design and operation Temperature sensing
022 03 04 00 <b>022 12 00 00</b>	Flux valve <b>ALERTING SYSTEMS, PROXIMITY SYSTEMS</b>
022 12 07 00	Altitude alert system
022 12 08 00	Radio-altimeter
022 12 10 00	ACAS/TCAS principles and operation
022 13 03 01	Electronic Flight Instrument System (EFIS) — Design, operation
<b>050 00 00 00</b>	<b>METEOROLOGY</b>
050 02 06 03	Clear-air turbulence (CAT) — Description, cause and location
050 10 02 03	Upper-air charts
<b>062 00 00 00</b>	<b>RADIO NAVIGATION</b>
062 02 05 04	ILS — Errors and accuracy
<del>062 02 06 00</del>	<del>MLS</del>
<del>062 02 06 01</del> to <del>062 02 06 04</del>	Principles Presentation and Interpretation, Coverage and range Error and accuracy'

## 8. AMC2 FCL.825(d) 'En-route instrument rating (EIR)' is amended as follows:

## 'AMC2 FCL.825(d) En-route instrument rating (EIR)

## THEORETICAL KNOWLEDGE INSTRUCTION AND EXAMINATION

## (a) GENERAL

The theoretical knowledge instruction and examination is the same as for the instrument rating following the competency-based modular course according to Appendix 6 Section Aa.

(b) THEORETICAL KNOWLEDGE

The applicant should complete an approved competency-based IR(A) or EIR theoretical knowledge (TK) course. The approved CB-IR(A) or EIR TK course may contain, ~~computer-based training, e-learning elements, interactive video, slide/tape presentation, learning carrels and other media as approved by the authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests; and
- (11) other training methods, media and tools approved by the competent authority.

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom ~~teaching~~ instruction, as required by ORA.ATO.305, ~~has to be provided,~~ may include all of the above except item (b)(9).

The approved CB-IR(A) or EIR TK course hours should be divided between the subjects, as based on the ATO's course established through instructional systems design, and agreed upon between the competent authority and the ATO.

(c) THEORETICAL KNOWLEDGE EXAMINATION

The number of questions per subject, the distribution of questions and the time allocated to each subject ~~is~~ are detailed in ~~AMC2 ARA.FCL.300(b)~~ AMC1 ARA.FCL.300(b).'

**9. GM1 FCL.825(d) 'En-route instrument rating (EIR)' is amended as follows:**

**'GM1 FCL.825(d) En-route instrument rating (EIR)**

**DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES FOR EIR**

For the detailed theoretical knowledge syllabus and learning objectives, refer to ~~GM1 FCL.615(b)~~ AMC1 FCL.310, FLC.515(b), FCL.615(b) and AMC1 FCL.615(b).'

**10. AMC1 to Appendix 3 'Training courses for the issue of a CPL and an ATPL' is amended as follows:**

**'AMC1 to Appendix 3 Training courses for the issue of a CPL and an ATPL**

[...]

**A. ATP integrated course: aeroplanes**

[...]

## THEORETICAL KNOWLEDGE

(c) The 750 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer-based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

The 750 hours of instruction should be divided in such a way that in each subject the minimum hours are:

(1) Air law	40 35 hours
(2) Aircraft general knowledge	80 100 hours
(3) Flight performance and planning	90 120 hours
(4) Human performance and limitations	50 35 hours
(5) Meteorology	60 hours
(6) Navigation	150 90 hours
(7) Operational procedures	20 25 hours
(8) Principles of flight	30 55 hours
(9) Communications	30 20 hours

Other subdivisions of hours may be agreed upon between the competent authority and the ATO.

[...]

**B. ATP modular theoretical knowledge course: aeroplanes**

- (a) The aim of this course is to train pilots who have not received the theoretical knowledge instruction during an integrated course to the level of theoretical knowledge required for the ATPL.
- (b) An approved course may contain in suitable proportions: ~~should include formal classroom work and may include the use of such facilities as interactive video, slide or tape presentation, learning carrels and computer-based training and other media distance learning (correspondence) courses as approved by the competent authority.~~

- (1) classroom work;

- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom instruction, as required by ORA.ATO.305, may include all of the above except item (b)(9).

- (c) The ATP modular training course should last 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.

### C. CPL/IR integrated course: aeroplanes

[...]

#### THEORETICAL KNOWLEDGE

- (c) The 500 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

The 500 hours of instruction should be divided in such a way that in each subject the minimum hours are:

(1)	Air law	30 25 hours
(2)	Aircraft general knowledge	50 75 hours
(3)	Flight performance and planning	60 80 hours
(4)	Human performance and limitations	15 20 hours
(5)	Meteorology	40 40 hours
(6)	Navigation	100 55 hours
(7)	Operational procedures	10 15 hours
(8)	Principles of flight	25 35 hours
(9)	Communications	30 15 hours

Other subdivisions of hours may be agreed upon between the competent authority and the ATO.

[...]

#### D. CPL integrated course: aeroplanes

[...]

##### THEORETICAL KNOWLEDGE

(c) The 350 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

[...]

#### E. CPL modular course: aeroplanes

(a) The CPL modular course should last 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.

~~(b) An approved course should include formal classroom work and may include the use of such facilities as interactive video, slide or tape presentation, learning carrels and computer based training and other media distance learning (correspondence) courses as approved by the competent authority. Approved distance learning (correspondence) courses may also be offered as part of the course.~~

##### THEORETICAL KNOWLEDGE

(eb) The 250 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodromes or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom instruction, as required by ORA.ATO.305, may include all of the above except item (b)(9).

#### FLYING TRAINING

(ec) The following flight time is suggested for the flying training

[...]

#### F. ATP/IR integrated course: helicopters

(...)

#### THEORETICAL KNOWLEDGE

(c) The 750 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;

(10) progress tests, Area 100 KSA assessments and mental maths test(s); and

(11) other training methods, media and tools approved by the competent authority.

The 750 hours of instruction should be divided in such a way that in each subject the minimum hours are:

(1) Air law	40 35 hours
(2) Aircraft general knowledge	80 100 hours
(3) Flight performance and planning	90 120 hours
(4) Human performance and limitations	50 35 hours
(5) Meteorology	60 hours
(6) Navigation	150 90 hours
(7) Operational procedures	20 25 hours
(8) Principles of flight	30 55 hours
(9) Communications	30 20 hours

Other subdivisions of hours may be agreed upon between the competent authority and the ATO.

[...]

#### G. ATP integrated course: helicopters

[...]

##### THEORETICAL KNOWLEDGE

(c) The 650 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:

(1) classroom work;

(2) lessons;

(3) tutorials;

(4) demonstrations, including those supported by demonstration equipment;

(5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;

(6) exercises that use demonstration equipment or training devices;

(7) directed study including workbook exercises or assignments;

(8) aerodrome or aviation industry field trips;

(9) computer-based training and e-learning elements;

(10) progress tests, Area 100 KSA assessments and mental maths test(s); and

(11) other training methods, media and tools approved by the competent authority.

The 650 hours of instruction should be divided in such a way that in each subject the minimum hours are:

(1)	Air law	30 hours
(2)	Aircraft general knowledge	70 90 hours
(3)	Flight performance and planning	65 90 hours
(4)	Human performance and limitations	40 30 hours
(5)	Meteorology	40 50 hours
(6)	Navigation	120 70 hours
(7)	Operational procedures	20 hours
(8)	Principles of flight	30 45 hours
(9)	Communications	25 15 hours

Other subdivisions of hours may be agreed upon between the competent authority and the ATO.

[...]

#### H. ATP modular theoretical knowledge course: helicopters

- (a) The aim of this course is to train pilots who have not received the theoretical knowledge instruction during an integrated course to the level of theoretical knowledge required for the ATPL.
- (b) An approved course, which also covers the Area 100 KSA, may contain in suitable proportions: ~~should include formal classroom work and may include the use of such facilities as interactive video, slide or tape presentation, learning carrels and computer based training and other media distance learning (correspondence) courses as approved by the competent authority.~~

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom instruction, as required by ORA.ATO.305, may include all of the above except item (b)(9).

- (c) The ATP modular training course should last 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.

**I. CPL/IR integrated course: helicopters**

[...]

## THEORETICAL KNOWLEDGE

(c) The 500 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer-based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;
- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

The 500 hours of instruction should be divided in such a way that in each subject the minimum hours are:

(1) Air law	30	25	hours
(2) Aircraft general knowledge	50	75	hours
(3) Flight performance and planning	60	80	hours
(4) Human performance and limitations	15	20	hours
(5) Meteorology	40		hours
(6) Navigation	100	55	hours
(7) Operational procedures	10	15	hours
(8) Principles of flight	25	35	hours
(9) Communications	30	15	hours

Other subdivisions of hours may be agreed upon between the competent authority and the ATO.

[...]

**J. CPL integrated course: helicopters**

(...)

## THEORETICAL KNOWLEDGE

(c) The 350 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer-based training, and other media as approved by the competent authority,~~ in suitable proportions:

- (1) classroom work;
- (2) lessons;

- (3) tutorials;
- (4) demonstrations, including those supported by demonstration equipment;
- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

The 350 hours of instruction should be divided in such a way that in each subject the minimum hours are:

(1) Air law	25 15 hours
(2) Aircraft general knowledge	30 40 hours
(3) Flight performance and planning	25 35 hours
(4) Human performance and limitations	10 hours
(5) Meteorology	30 hours
(6) Navigation	55 35 hours
(7) Operational procedures	8 10 hours
(8) Principles of flight	20 30 hours
(9) Communications	10 hours

Other subdivisions of hours may be agreed upon between the competent authority and the ATO.

[...]

#### K. CPL modular course: helicopters

- (a) The CPL modular course should last 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.
- ~~(b) An approved course should include formal classroom work and may include the use of such facilities as interactive video, slide or tape presentation, learning carrels and computer based training and other media distance learning (correspondence) courses as approved by the competent authority. Approved distance learning (correspondence) courses may also be offered as part of the course.~~

#### THEORETICAL KNOWLEDGE

- (eb) The 250 hours of instruction, which also covers the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:
  - (1) classroom work;
  - (2) lessons;
  - (3) tutorials;
  - (4) demonstrations, including those supported by demonstration equipment;

- (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (6) exercises that use demonstration equipment or training devices;
- (7) directed study including workbook exercises or assignments;
- (8) aerodrome or aviation industry field trips;
- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom instruction, as required by ORA.ATO.305, may include all of the above except item (b)(9).

#### FLYING TRAINING

(dc) [...]

#### VISUAL INSTRUCTION

(ed) [...]

#### BASIC INSTRUMENT INSTRUCTION

(fe) [...]

### 11. GM1 to Appendix 5 'Integrated MPL training course' is amended as follows:

#### 'GM1 to Appendix 5 Integrated MPL training course

[...]

#### THEORETICAL KNOWLEDGE INSTRUCTION

- (e) The 750 hours of instruction, which also cover the Area 100 KSA, may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:
- (1) classroom work;
  - (2) lessons;
  - (3) tutorials;
  - (4) demonstrations, including those supported by demonstration equipment;
  - (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
  - (6) exercises that use demonstration equipment or training devices;
  - (7) directed study including workbook exercises or assignments;
  - (8) aerodrome or aviation industry field trips;

- (9) computer-based training and e-learning elements;
- (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (11) other training methods, media and tools approved by the competent authority.'

[...]

**12. AMC1 to Appendix 6 'Modular training courses for the IR' is amended as follows:**

**'AMC1 to Appendix 6 Modular training courses for the IR**

ALL MODULAR FLYING TRAINING COURSES FOR THE IR, EXCEPT COMPETENCY-BASED MODULAR FLYING TRAINING COURSE

- (a) The theoretical knowledge instruction may be given at an ATO conducting theoretical knowledge instruction only, in which case the head of training (HT) of that organisation should supervise that part of the course.
- (b) The 150 hours of instruction, which include the application of threat and error management (TEM), may include ~~can include classroom work, interactive video, slide or tape presentation, learning carrels, computer based training, and other media as approved by the competent authority,~~ in suitable proportions:
  - (1) classroom work;
  - (2) lessons;
  - (3) tutorials;
  - (4) demonstrations, including those supported by demonstration equipment;
  - (5) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
  - (6) exercises that use demonstration equipment or training devices;
  - (7) directed study including workbook exercises or assignments;
  - (8) aerodrome or aviation industry field trips;
  - (9) computer-based training and e-learning elements;
  - (10) progress tests, Area 100 KSA assessments and mental maths test(s); and
  - (11) other training methods, media and tools approved by the competent authority.'

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom instruction, as required by ORA.ATO.305, may include all of the above except item (b)(9).'

[...]

**13. AMC3 to Appendix 6 'Modular training courses for the IR' is amended as follows:**

**'AMC3 to Appendix 6 Modular training courses for the IR**

**SECTION Aa IR(A) — COMPETENCY-BASED MODULAR FLYING TRAINING COURSE**

- (a) THEORETICAL KNOWLEDGE INSTRUCTION

- (1) The theoretical knowledge instruction may be given at an ~~ATO approved training organisation~~ conducting theoretical knowledge instruction only, in which case the ~~head of training HT~~ of that ~~ATO organisation~~ should supervise that part of the course.
- (2) ~~The required theoretical knowledge instruction for the IR following the competency-based route may contain computer-based training, e-learning elements, interactive video, slide/tape presentation, learning carrels and other media as approved by the authority, in suitable proportions. Approved distance learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom teaching has to be provided as required by ORA.ATO.305. The hours required for the theoretical knowledge instruction for the IR following the competency-based training route should be divided between the subjects and include the application of threat and error management (TEM) as based on the ATO's systems course design and agreed upon between the competent authority and the ATO.~~

An approved course, which also covers the Area 100 KSA, may contain in suitable proportions: ~~should include formal classroom work and may include the use of such facilities as interactive video, slide or tape presentation, learning carrels and computer-based training and other media distance learning (correspondence) courses as approved by the competent authority.~~

- (i) classroom work;
- (ii) lessons;
- (iii) tutorials;
- (iv) demonstrations, including those supported by demonstration equipment;
- (v) exercises carried out as groups or individuals and based on pre-flight and en-route planning, communications, presentations and projects;
- (vi) exercises that use demonstration equipment or training devices;
- (vii) directed study including workbook exercises or assignments;
- (viii) aerodrome or aviation industry field trips;
- (ix) computer-based training and e-learning elements;
- (x) progress tests, Area 100 KSA assessments and mental maths test(s); and
- (xi) other training methods, media and tools approved by the competent authority.

Approved distance-learning (correspondence) courses may also be offered as part of the course. The minimum amount of classroom instruction, as required by ORA.ATO.305, may include all of the above except item (a)(2)(ix).'

[...]