Annex I to ED Decision 2023/011/R

'AMC and GM to Part ATCO — Issue 1, Amendment 4'

The text of the amendment is arranged to show deleted, new and unchanged text as follows:

— deleted text is ~~struck through~~;

— new or amended text is highlighted in blue;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

Note to the reader

In amended, and in particular in existing (that is, unchanged) text, 'Agency' is used interchangeably with 'EASA'. The interchangeable use of these two terms is more apparent in the consolidated versions. Therefore, please note that both terms refer to the 'European Union Aviation Safety Agency (EASA)'.

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Annex I to ED Decision 2015/010/R of the Executive Director of the Agency of 13 March 2015 is amended as follows:

ANNEX I (PART ATCO)

REQUIREMENTS FOR THE LICENSING OF AIR TRAFFIC CONTROLLERS

SUBPART A — GENERAL REQUIREMENTS

GM1 ATCO.A.010 ~~Exchange of licences~~ Application for change of competent authority

RECOGNITION OF LICENCES AND CERTIFICATES

~~In accordance with~~ Considering Article ~~11~~ 67 of Regulation ~~(EC) No 216/2008~~ (EU) 2018/1139, ~~Member States shall recognise~~ mutual recognition applies to:

(a) air traffic controller and student air traffic controller licences, including their ratings, rating endorsements, on-the-job training instructor (OJTI), synthetic training device instructor (STDI) and assessor endorsements, as well as language proficiency endorsements and associated medical certificates issued by ~~other~~ Member States in accordance with this Regulation;

(b) certificates of air traffic controller training organisations, aero-medical examiners and aero-medical centres issued by ~~other~~ Member States in accordance with this Regulation; and

(c) certificates of completion of training courses issued by training organisations approved by ~~other~~ Member States leading to the grant of the ratings, endorsements and/or the student air traffic controller licence referred to in point ~~paragraph~~ (a).

~~GM1 ATCO.A.010(a) Exchange of licences~~

~~EXERCISE OF PRIVILEGES OF THE LICENCE IN A DIFFERENT MEMBER STATE~~

~~(a) Licences should only be exchanged in cases there is certainty that the licence holder is going to exercise the privileges of the licence in a different Member State other than that in which the licence was issued.~~

~~(b) For this purpose, and with the intention of preventing unnecessary administrative burden, the competent authorities may require the licence holder, together with the application for exchange, to prove that he/she is going to receive unit training by an approved training organisation that truly permits him/her to exercise the privileges of the licence in that Member State.~~

GM21 ATCO.A.010(a) ~~Exchange of licences~~ Application for change of competent authority

EXERCISE OF PRIVILEGES OF THE LICENCE IN TWO OR MORE MEMBER STATES

In cases where privileges are exercised in two or more Member States, the agreement concluded amongst the Member States concerned should define the allocation of tasks and the responsibilities related to licensing.

GM1 ATCO.A.010(b) Application for change of competent authority

EXERCISE OF STUDENT AIR TRAFFIC CONTROLLER PRIVILEGES

The privileges of a student air traffic controller licence may also be exercised by an air traffic controller that undertakes training for a new unit endorsement.

AMC1 ATCO.A.010(b);(c) Application for change of competent authority

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EXERCISE OF LICENCE PRIVILEGES AND LANGUAGE PROFICIENCY REQUIREMENTS

According to point ATCO.B.030(a), air traffic controllers and student air traffic controllers should not exercise the privileges of their licences unless they have a valid language proficiency endorsement in the language(s) imposed by their Member State.

If such local language requirements are imposed, the change of competent authority and the resulting exchange of licence should take place before the start of the on-the-job training to enter the new language proficiency endorsement.

The exercise of synthetic training device instructor (STDI) and assessor privileges in a synthetic training device environment in a Member State whose competent authority is not the one that has issued the licence, should be limited to exercises and assessments conducted in the English language, unless the STDI or assessor holds a language proficiency endorsement in the language imposed by the Member State where the privileges are exercised.

GM1 ATCO.A.015(b);(c) Exercise of the privileges of licences and provisional inability

GROUNDS FOR PROVISIONAL INABILITY

(a) Examples of grounds for doubting the ability to safely exercise the privileges of the licence may be that the licence holder is:

(1a) under the influence of psychoactive substances;

(2b) unable ~~unfit~~ to perform the duties due to injury, fatigue, sickness, stress, including critical incident stress or other similar causes;

(3c) not meeting all the competence-related requirements set out in the unit competence scheme.

(b) Provisional inability based on the grounds referred to in points (a)(1) and (a)(2) is meant to cover only short periods of time (for example: generally before the next scheduled duty period, but no longer than 7 days) with the aim of allowing the affected air traffic controller to consult an aero-medical examiner regarding the doubts about being able to safely exercise the privileges of their licence.

In such cases, the provisional inability may only remain applicable until a medical review is performed by an aero-medical examiner.

GM1 ATCO.A.015(d) Exercise of the privileges of licences and provisional inability

PROCEDURES

The procedures developed and implemented to enable licence holders declaring provisional inability to exercise the privileges of their licence~~, to manage the operational impact of provisional inability cases~~ and to inform the competent authority should include but are not limited to:

(a) the processes to declare and terminate provisional inability;

(b) an indicative list of cases when the competent authority shall be informed of the declaration or termination of the provisional inability; and

(c) the processes to inform the competent authority~~; and~~

~~(d) the mitigating measures to be implemented to ensure sufficient capacity and the continuity of the service.~~

SUBPART B — LICENCES, RATINGS AND ENDORSEMENTS

GM1 ATCO.B.001(a);(d) Student air traffic controller licence

PRIVILEGES OF A STUDENT AIR TRAFFIC CONTROLLER LICENCE

The privileges of a student air traffic controller licence are exercised when providing air traffic control services in live traffic under the supervision of an on-the-job training instructor. A student air traffic controller licence is required for on-the-job training and not necessarily for the transitional and pre-on-the-job phases of unit training.

GM1 ATCO.B.001(d) Student air traffic controller licence

ASSESSMENT OF PREVIOUS COMPETENCE

The assessment of previous competence includes an assessment of the practical skills demonstrated by the person being assessed as well as an examination of the person's knowledge and understanding.

GM1 ATCO.B.005(e) Air traffic controller licence

ASSESSMENT OF PREVIOUS COMPETENCE

The assessment of previous competence includes an assessment of the practical skills demonstrated by the person being assessed as well as an examination of the person's knowledge and understanding.

AMC1 ATCO.B.010(a)(2);(3) Air traffic controller ratings

SURVEILLANCE FALLBACK AND CONTINGENCY MEASURES

The approach control procedural (APP) rating is not required for approach control surveillance (APS) rating holders when applying surveillance fallback and contingency measures. However, with reference to points ATCO.D.045(c)(3) and ATCO.D.080(b)(2), specific training related to surveillance fallback and contingency procedures should be included in the unit and refresher training to prepare air traffic controllers to deal with such situations.

If contingency plans also include procedures for service continuity by means of providing procedural air traffic control services, a procedural rating should be held and maintained.

AMC1 ATCO.B.010(a)(4);(5) Air traffic controller ratings

SURVEILLANCE FALLBACK AND CONTINGENCY MEASURES

The area control procedural (ACP) rating is not required for area control surveillance (ACS) rating holders when applying surveillance fallback and contingency measures. However, with reference to points ATCO.D.045(c)(3) and ATCO.D.080(b)(2), specific training related to surveillance fallback and contingency procedures should be included in the unit and refresher training to prepare air traffic controllers to deal with such situations.

If contingency plans also include procedures for service continuity by means of providing procedural air traffic control services, a procedural rating should be held and maintained.

GM1 ATCO.B.010(b) Air traffic controller ratings

ASSESSMENT OF PREVIOUS COMPETENCE

The assessment of previous competence includes an assessment of the practical skills demonstrated by the person being assessed as well as an examination of the person's knowledge and understanding.

AMC1 ATCO.B.015(a) Air traffic controller rating endorsements

AERODROME CONTROL SURVEILANCE (SUR) ENDORSEMENT PRIVILEGES

The SUR endorsement indicates that the holder has the skills to use ATS surveillance systems for the provision of aerodrome control service for the functions described in point ATS.TR.155(a) of Annex IV to Commission Implementing Regulation (EU) 2017/373[1], and in the related point (c) of AMC1 ATS.TR.155(a).

~~GM1 ATCO.B.015(a)(3) Air traffic controller rating endorsements~~

~~**TOWER CONTROL ENDORSEMENT PRIVILEGES**~~

~~Where aerodrome control is provided from one operational position, this shall be indicated in the ATC licence by the issue of a Tower Control (TWR) endorsement to the Aerodrome Control Instrument rating. Aerodrome control may either be one operational position or be divided between two operational positions, Ground Movement Control (GMC) and Air Control (AIR). Consequently, the TWR endorsement entitles the holder of that rating endorsement to either provide aerodrome control from one working position or to provide AIR or GMC separately.~~

GM1 ATCO.B.020(c) Unit endorsements

ISSUE OF A UNIT ENDORSEMENT IN CONNECTION WITH THE ISSUE OF A TEMPORARY ON-THE-JOB TRAINING INSTRUCTOR (OJTI) AUTHORISATION

It is recognised that the completion of a unit endorsement course in accordance with the requirements set out in Section 3 of Subpart D of Part ATCO as regards the on-the-job training (OJT) phase may not be possible in cases where a new ATC unit or sector is established, a new rating or rating endorsement is established at an ATC unit, or when a temporary ATC unit reopens.

AMC1 ATCO.B.020(d) Unit endorsements

LIMITATION IN RELATION TO THE EXERCISE OF THE AERODROME CONTROL RATING PRIVILEGES

If a unit endorsement course contains operational procedures only for air control or ground control, the unit endorsement should reflect the limitation in relation to the rating privileges.

[1] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).

AMC1 ATCO.B.020(eg) Unit endorsements

VALIDITY OF THE UNIT ENDORSEMENT

When establishing the validity of a unit endorsement, the specificities of the unit and seasonal variations should be taken into account.

Appropriate means should be in place to monitor the competence of the air traffic controllers. The means should be proportionate to the validity time.

If the proposed validity time of the unit endorsement exceeds 12 months, additional means should be in place to monitor and ensure the continuous competence of the air traffic controllers.

If the ATC unit is proposing to increase the validity time of the unit endorsement, a safety assessment should be conducted. The safety assessment may cover several units.

AMC1 ATCO.B.020(gi)(3) Unit endorsements

PRACTICAL SKILLS ASSESSMENT FOR THE REVALIDATION OF EACH UNIT ENDORSEMENT

(a) If the assessment of practical skills is taking the form of a dedicated assessment consisting of a single assessment or a series of assessments, the last assessment declaring the licence holder competent should take place within the ~~three~~3-month period immediately preceding the unit endorsement expiry date.

(b) If the assessment of practical skills is taking the form of a continuous assessment by which the air traffic controller's competence is assessed along a defined period of time, the end of that defined period and the formal conclusion on declaring the licence holder competent should take place within the ~~three~~3-month period immediately preceding the unit endorsement expiry date.

GM1 ATCO.B.020(ik) Unit endorsements

COMMENCEMENT OF THE UNIT ENDORSEMENT VALIDITY IN CASE OF EARLY REVALIDATION

For the purpose of establishing the validity period of the unit endorsement in case of early revalidation, the date of the assessment should be the date of the:

(a) last assessment declaring the licence holder competent in case of a dedicated assessment; and

(b) formal conclusion of declaring the licence holder competent in case of continuous assessment, provided that the formal conclusion takes place immediately after the period during which the air traffic controller's competence has been assessed.

AMC1 ~~GM1~~ATCO.B.025(a)(3) Unit competence scheme

MINIMUM NUMBER OF HOURS

The minimum number of hours should be defined for each unit endorsement associated to a rating, and it should be identical for each unit endorsement holder within the same unit.

For licence holders holding more than one unit endorsement in the same ATC unit, the minimum number of hours may be defined as a combined value based on the assessment provided by the air navigation service provider.

Nevertheless, maintaining competence should be appropriately ensured for all valid unit endorsements, as well as for all sectors and/or working positions covered by a unit endorsement.

~~AMC1 ATCO.B.035(a)(3)(i) Validity of language proficiency endorsement~~

~~**VALIDITY OF THE LANGUAGE ENDORSEMENT OF PROFICIENCY LEVEL 6 IN ENGLISH LANGUAGE**~~

~~When replacing the licences according to Article 8(1) of Regulation (EU) 2015/340, the validity period for the expert level (level six) language proficiency endorsements shall be introduced into the new licence.~~

~~The nine-year validity period for an expert level (level six) language proficiency endorsement in English should be counted from the date of the issue of the new licence or from the date of the assessment.~~

AMC4 ATCO.B.040 Assessment of language proficiency

CRITERIA FOR THE ACCEPTABILITY OF LANGUAGE ASSESSMENT BODIES

(a) A language assessment body should provide clear information about its organisation and its relationships with other organisations.

(b) If a language assessment body is also an air traffic controller training organisation, there should be a clear and documented separation between the two activities.

(c) The language assessment body should employ a sufficient number of qualified interlocutors and language proficiency assessors to administer the required tests.

(d) The assessment documentation should include at least the following:

(1) assessment objectives;

(2) assessment layout, timescale, technologies used, assessment samples, voice samples;

(3) assessment criteria and standards (at least for the operational, extended and expert levels of the rating scale in Appendix 1 to Annex I to Regulation (EU) 2015/340);

(4) documentation demonstrating the assessment validity, relevance and reliability for the operational, ~~and~~ extended and expert levels;

~~(5) documentation demonstrating the assessment validity, relevance and reliability for the expert level;~~

(~~6~~5) procedures to ensure that language assessments are standardised within the language assessment body and in the ATC community;

(~~7~~6) assessment procedures and responsibilities, such as:

— preparation of individual assessment;

— administration: location(s), identity check and invigilation, assessment discipline, confidentiality/security;

— reporting and documentation provided to the competent authority and/or to the applicant, including sample certificate; and

— retention of documents and records.

(~~8~~7) The assessment documentation and records should be kept for a period of time determined by the competent authority and made available to the competent authority upon request.

GM2 ATCO.B.040 Assessment of language proficiency

Further information can be found in the 'Manual on the Implementation of ICAO Language Proficiency Requirements' (ICAO Doc 9835) and the 'Language Testing Criteria for Global Harmonization' (ICAO Cir 318 AN/180).

SUBPART C — REQUIREMENTS FOR INSTRUCTORS AND ASSESSORS

SECTION 1 — INSTRUCTORS

GM1 ATCO.C.030(c)(1) Synthetic training device instructor (STDI) privileges

SHORTENING OF THE RATING EXPERIENCE REQUIREMENT FOR STDIs

When assessing a training organisation's request for the shortening of the rating experience requirement for STDIs, competent authorities should take into account the complexity of the training expected to be delivered by the potential STDI and the impact on the continuity of the provision of training.

GM1 ATCO.C.030(c)(~~2~~3) Synthetic training device instructor (STDI) privileges

PROVISION OF TRAINING FOR SPECIFIC AND SELECTED OPERATIONAL TASKS

Some of the skills required for ~~the two different aerodrome control ratings, for~~ the two different procedural ratings, as well as for the two different surveillance ratings, are the same or similar. Therefore, instruction not being specific for one rating or the training being for specific and selected operational tasks that do not require the learner to practise all ~~of~~ the tasks which are normally associated with a fully operational environment, may be provided by an STDI that has at least 2 years of experience~~, having experience of at least two years~~ in a rating that requires similar skills.

GM1 ATCO.C.035(a) Application for synthetic training device instructor (STDI) endorsement

SHORTENING OF THE LICENCE EXPERIENCE REQUIREMENT FOR STDIs

When assessing a training organisation's request for the shortening of the licence experience requirement for STDIs, competent authorities should take into account the complexity of the training expected to be delivered by the potential STDI and the impact on the continuity of the provision of training.

SECTION 2 — ASSESSORS

GM1 ATCO.C.060(b) Validity of assessor endorsement

REVALIDATION

(a) The ~~s~~successful completion of the refresher training in assessment skills and current operational practices may be verified by several means~~;~~ for example, by:

(1) dedicated or continuous assessment;

(2) peer assessment; or

(3) demonstration of the ~~practical instructional~~ assessment skills.

(b) Current operational practices may be refreshed by transitional and pre-on-the-job training.

(c) The verification should be undertaken following the completion of the refresher training.

SUBPART D — AIR TRAFFIC CONTROLLER TRAINING

SECTION 2 — INITIAL TRAINING REQUIREMENTS

AMC1 ATCO.D.010(a) Composition of initial training

GENERAL

1. Structure of the basic and rating training syllabi

(a) The basic and rating training syllabi are~~have been~~ structured as follows:

(1) The syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure serves the definition and classification of the objectives. There can be one or several objectives linked to each subtopic.

(2) Objectives are assigned to a specific ~~subject~~ topic/subtopic which deals with the knowledge and skills needed to accomplish the related subject ~~objective~~.

(3) Subjects, topics and subtopics are contained in Appendices 2 to ~~8~~7 to Annex I to Commission Regulation (EU) 2015/340, and are repeated in:

— AMC1 ATCO.D.010(a)(1) Composition of initial training — BASIC TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

~~— AMC1 ATCO.D.010(a)(2)(i) Composition of initial training — AERODROME CONTROL VISUAL RATING (ADV) TRAINING — SUBJECT OBJECTIVES AND TRAINING OBJECTIVES;~~

— AMC1 ATCO.D.010(a)(2)(i~~i~~) Composition of initial training — AERODROME CONTROL ~~INSTRUMENT~~ RATING ~~FOR TOWER ADI~~ (~~TWR~~ADC) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

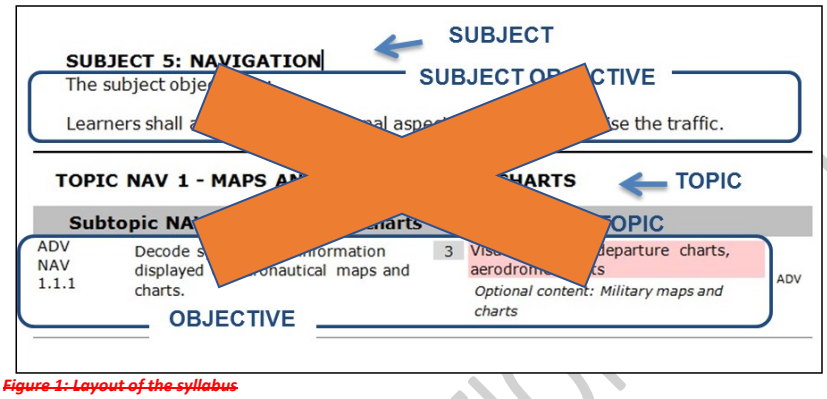
— AMC1 ATCO.D.010(a)(2)(ii~~i~~) Composition of initial training — APPROACH CONTROL PROCEDURAL RATING (APP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

— AMC1 ATCO.D.010(a)(2)(iii~~v~~) Composition of initial training — AREA CONTROL PROCEDURAL RATING (ACP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

— AMC1 ATCO.D.010(a)(2)(iv) Composition of initial training — APPROACH CONTROL SURVEILLANCE RATING (APS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

— AMC1 ATCO.D.010(a)(2)(v~~i~~) Composition of initial training — AREA CONTROL SURVEILLANCE RATING (ACS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

in order to provide the reader with a comprehensive and unique reference document for the basic and each of the rating training~~s~~ courses. ~~Subject objectives and t~~Training objectives are included in, and form an integral part of, each of the aforementioned AMC.



~~*Figure 1: Layout of the syllabus*~~

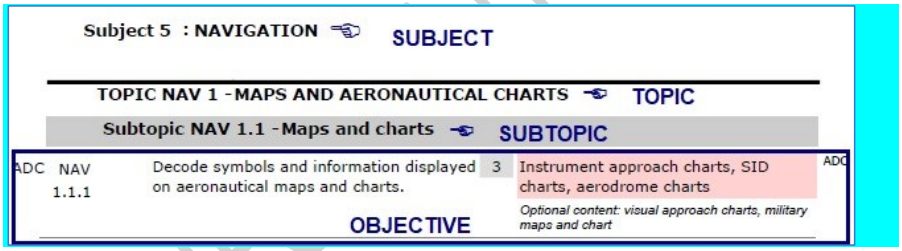


Figure 1: Layout of the syllabus

(b) The following principles may be applied to the development of a training course that is based on any of the syllabi:

(1) The structure of the syllabi and the order of the objectives contained therein is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.

(2) No objective from the basic training syllabus is repeated as 'a refresher' in the rating training syllabi.

(3) The number of objectives contained within a subtopic does not necessarily signify how long it should take to teach that subtopic. For example, a subtopic containing five relatively straightforward objectives~~,~~ may take a shorter time to be taught than another subtopic containing two complex objectives.

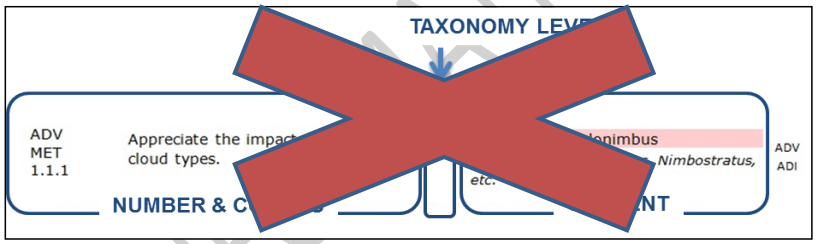
2. Structure of the objectives

(a) An objective consists of three elements:

(1) The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

(2) The level, which indicates numerically the taxonomy of the action verb.

(3) The content, which may be implicit or explicit. ~~The e~~Explicit content is written in the content field, while ~~the~~ implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red-shaded field. Optional content, written in italics, ~~may be used if considered appropriate.~~ is provided to help training designers develop their training material and may suggest possible reference documents that could be used and/or elaborate on the content with specific examples. With or without explicit content, the objective needs to be covered since the implementation is implied in its corpus (text of the objective) and associated context (Subtopic/Topic/Subject/Rating).



~~*Figure 2: Layout of an objective*~~

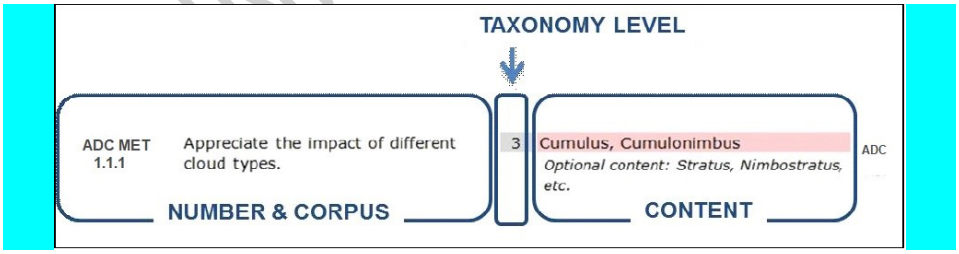
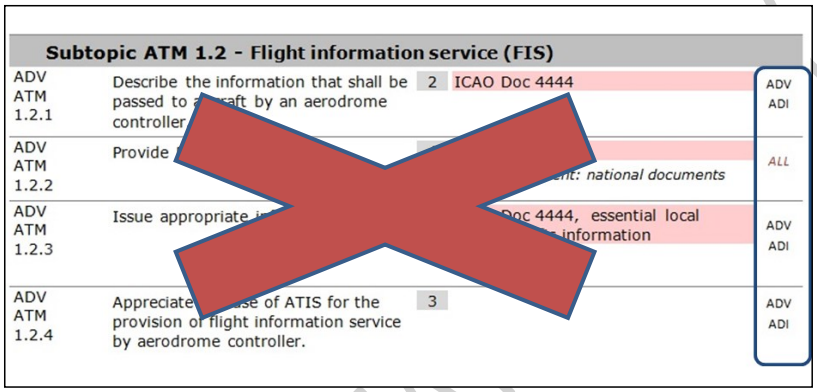


Figure 2: Layout of an objective

3. Repeated and common objectives

(a) Repeated and common objectives are only applicable to rating training.

(b) To the right of each objective, there is an indication of which other ratings contain this particular objective. If the rating is indicated in red italics, it notifies the reader that the objective(s) is (are) verbatim in each rating; however, the objective numbers are different. This indication is the first step to help ~~the~~ training providers identify ~~the~~ potential commonalities between the various syllabi. As a second step, ~~the~~ training providers must determine, on~~at~~ the level of local implementation, whether the objective is to be regarded as repeated or common.



Subtopic ATM 1.2 - Flight information service (FIS)				
ADV ATM 1.2.1	Describe the information that shall be passed to aircraft by an aerodrome controller	2	ICAO Doc 4444	ADV ADI
ADV ATM 1.2.2	Provide		nt: national documents	ALL
ADV ATM 1.2.3	Issue appropriate		Doc 4444, essential local information	ADV ADI
ADV ATM 1.2.4	Appreciate se of ATIS for the provision of flight information service by aerodrome controller.	3		ADV ADI

~~*Figure 3: Indication of the ratings that particular objective applies to*~~

Subtopic ATM 1.2 - Flight information service (FIS)				
ADC ATM 1.2.1	Describe the information that shall be passed to aircraft by an aerodrome controller.	2	Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ADC
ADC ATM 1.2.2	Provide FIS.	4	Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: national documents*	ALL
ADC ATM 1.2.3	Issue appropriate information.	3	Regulation (EU) 2017/373, essential local traffic, traffic information	ADC
ADC ATM 1.2.4	Appreciate the use of ATIS in the provision of flight information service.	3	Regulation (EU) No 923/2012	ALL

Figure 3: Indication of the ratings to which a particular objective applies

3.1 Repeated objectives

All the objectives appearing in a syllabus are implicitly appropriate to this syllabus. As a consequence, objectives may be repeated 'verbatim' in different rating syllabi and nevertheless specify a different performance. The reader always needs to mentally add the sentence 'in this syllabus context' at the end of each objective.

For example, the objective 'use approved phraseology' is repeated (same level, same corpus, same content) in all the syllabi but is different because the context is different in each syllabus (a learner that is able to use approved phraseology for en-route traffic will need additional training before mastering the phraseology in the provision of aerodrome control).

3.2 Common objectives

(a) Common objectives are verbatim the same objectives that appear in more than one rating syllabi in the same context so that they do not need to be taught again in case of combined or successively organised courses.

For example, the objective 'describe the human information-processing model' is common for all the syllabi because the context is non-specific and is, therefore, not determined by the type of rating.

(b) As a general principle, the rating subject 'Human Factors' is identical in each of the rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need to be taught only once. If a learner acquires an additional rating, that learner would not be required to repeat the Human Factors objectives.

4. Action verbs that support the taxonomy for training objectives

(a) The five taxonomy levels should be understood to have the following levels of complexity:

(1) Action verbs for Level 1

Level 1 — A basic knowledge of the subject. It is the ability to remember essential points, to memorise data and retrieve it.

L1 Verb	Definition	Example
Define	State what it is and what its limits are; state the definition.	Define ATC service.
Draw	Produce a picture, pattern or diagram.	Draw the block diagram. Draw a holding pattern.
List	Say one after the other.	List the different types of jet engines. ~~main structure components of an aircraft.~~
Name	Give the name of objects or procedures.	Name the competent authorities responsible for ATCO licensing and ANSP oversight. ~~the components of an ILS.~~ ~~Name the key national and international aviation organisations.~~
Quote	Repeat what is written or said.	Quote the ICAO definition of ATC service.
Recognise	To know what it is because you have seen it before.	Recognise the information contained in the different parts of the AIP.
State	Say or write in a formal or definite way.	State the meteorological hazards to aviation.

(2) Action verbs for Level 2

Level 2 — The ability to understand and to discuss the subject matter intelligently in order to represent and act upon certain objects and events.

L2 Verb	Definition	Example
Characterise	To describe the quality of features in something.	Characterise the main radio navigation techniques based on ground-based systems. ~~items of ATC equipment.~~
Consider	To think carefully about it.	Consider how the evolution of a situation may have an impact on safety. ~~the benefits of Critical Incident Stress Management (CISM).~~
Demonstrate	Describe and explain; logically or mathematically prove the truth of a statement.	Demonstrate the importance of good communication in ATC.
Describe	Say what it is like or what happened.	Describe the methods by which ICAO notifies and implements legislation.
Differentiate	Show the differences between things.	Differentiate between different types of visibility.
Explain	Give details about something or describe so that it can be understood.	Explain the purpose and function of ICAO.
Take account of	Take into consideration before deciding.	~~Take account of the wind influence when calculating a ground speed.~~ Take account of the limitations of equipment and systems.

(3) Action verbs for Level 3

Level 3 — A thorough knowledge of the subject and the ability to apply it with accuracy. The ability to make use of the repertoire of knowledge to develop plans and activate them.

L3 Verb	Definition	Example
Act	Carry out, execute.	Act to reduce stress.
Apply	Use something in a situation or activity.	Apply separation.
Appreciate	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it.	Appreciate the ~~necessity~~ need for coordination (the learner says that the coordination will be done and with whom; the learner does not perform the actual coordination).
Assist	Help somebody to do a job by doing part of it.	Assist the pilot.
Calculate	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do.	Calculate appropriate levels. Calculate conversions between the three north designations.

L3 Verb	Definition	Example
Check	Make sure the information is correct (satisfactory).	Check all relevant documentation before managing traffic. ~~the accuracy of flight data information.~~ Check availability of information ~~material~~.
Choose	Select out of number, decide to do one thing rather than another.	Choose appropriate levels. Choose the appropriate separation methods. ~~which aircraft should be vectored.~~
Collect	Assemble, accumulate, bring or come together.	Collect appropriate information relevant to the situation. ~~examples of different types of error, their causes and consequences for ATC.~~
Conduct	Organise and carry out.	Conduct level changes. ~~coordination.~~
Confirm	Establish more firmly, corroborate.	Confirm sequence order.
Decode	Turn into ordinary writing, decipher.	Decode the content of weather reports and forecasts.
Encode	Put into code or cipher.	Encode and decode flight plans (including supplementary information).
Estimate	Form an approximate judgement of a number, form an opinion.	Estimate the heading for a new track and the distance to the next way point. ~~and direction between two points.~~
Execute	Perform action.	Execute selected plan in a timely manner. ~~corrective actions.~~
Extract	Copy out, make extracts from, find, deduce.	Extract pertinent data from relevant sources to produce a flight progress display.
Identify	Associate oneself inseparably with, establish the identity.	Identify potential or actual abnormal and emergency situations. ~~the role of ATC as a service provider and the requirements of the ATS users.~~ Identify ~~an~~ aircraft.
Inform	Tell, give facts or information.	Inform the supervisor of local factors affecting the ATS system capacity and air traffic flow management.
Initiate	Begin, set going, originate.	Initiate appropriate coordination.
Input	Enter in the system.	Input data.
Issue	Send forth, publish.	Issue appropriate ATC clearances. Issue appropriate ~~traffic~~ information concerning the position of conflicting traffic.
Maintain	Cause or enable to continue.	Maintain situational awareness by monitoring traffic ~~flight data display~~.
Measure	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size.	Measure distance on a map.
Monitor	Keep under observation.	Monitor the technical integrity of the controller working position. ~~traffic.~~ ~~Monitor the effect of human information processing factors on decision-making.~~
Notify	Make known, announce, report.	Notify runway in use.

L3 Verb	Definition	Example
Obtain	Acquire easily without research.	Obtain meteorological information. ~~Obtain information from the relieving controller.~~
Operate	Conduct work on equipment.	Operate the equipment of the controller working position.
Pass	Move, cause to go, transmit.	Pass essential traffic information without delay.
Perform	Carry into effect, go through, execute.	Perform communication effectively.
Process	To put through the steps of a prescribed procedure.	Process pertinent data on data displays.
Record	Register, set down for remembrance or reference.	Record information by writing effectively.
Relay	Receive and pass on, broadcast.	Relay meteorological information ~~from pilot reports~~.
Respond	Provide an answer, perform answering or corresponding action.	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
Scan	Continuously observe rapidly, sequentially and selectively in order to extract relevant data.	Scan data display.
Transfer	Hand over.	Transfer information to the relieving controller.
Update	Refresh, bring up to date.	Update the data display to accurately reflect the traffic situation.
Use	Employ for a purpose, handle as instrument, put into operation.	Use approved phraseology. Use the available means for coordination.
Verify	Establish truth of.	Verify that the settings of the working position are appropriate ~~the mode C information~~.

(4) Action verbs for Level 4

Level 4 — Ability to establish a line of action within a unit of known applications following the correct chronology and the adequate method to resolve a problematic situation. This involves the integration of known applications in a familiar situation.

L4 Verb	Definition	Example
Acquire	Gain by oneself and for oneself, obtain after research.	Acquire relevant aeronautical information.
Adjust	Change to a new position, value or setting.	Adjust the surveillance system display.
Allocate	Assign, devote.	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.
Analyse	Examine minutely the constitution of.	Analyse examples of pilot–controller communication for effectiveness.

L4 Verb	Definition	Example
		Analyse the information provided by the ATS surveillance system ~~the radar equipment~~.
Assign	Designate or set an element.	Assign codes.
Coordinate	Negotiate with others in order to work together effectively.	Coordinate runway in use. Coordinate when providing FIS.
Comply	Act in accordance with.	Comply with rules.
Delegate	Commit authority to somebody.	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
Detect	Discover existence of.	Detect conflicts in time for appropriate resolution ~~potential conflict~~.
Ensure	Make safe, make certain.	Ensure the agreed course of action is carried out.
Expedite	Assist the progress of, do speedily.	Expedite traffic.
Integrate	Combine into a whole, complete by addition of parts.	Integrate appropriate ATC clearances in control service.
Manage	Handle, conduct, maintain control over something, be in charge of.	Manage traffic on the manoeuvring area. Manage traffic in accordance with a change to operational procedures ~~procedural changes~~.
Organise	Give orderly structure to, frame and put into working order.	Organise pertinent data on data displays. Organise priority of actions.
Predict	Forecast.	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
Provide	Supply, furnish.	Provide vectoring ~~radar separation~~. Provide FIS.
Relate	Establish link with.	Relate a pressure setting to an altitude.

(5) Action verbs for Level 5

Level 5 — Ability to analyse new situation in order to elaborate and apply one or other relevant strategy to solve a complex problem. The defining feature is that the situation is qualitatively different from those previously met, requiring judgement and evaluation of options.

L5 verb	Definition	Example
Assess	Estimate value or difficulty, evaluate, appraise.	Assess workload.
Balance	Weigh (a question, two arguments, etc., against each other).	Balance the workload against personal capacity ~~with the traffic demand~~.
Discuss	Investigate by reasoning or argument.	Discuss the impact of regulation.
Evaluate	Ascertain amount of, find numerical expression for.	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
Interpret	To decide on something's meaning or significance when there is a choice.	Interpret operational information.

L5 verb	Definition	Example
Optimise	To make optimal; get the most out of; use best; modify to achieve maximum efficiency.	Optimise the use of support tools.
Resolve	Solve, clear up, settle.	Resolve conflict.
Select	Pick out as best or most suitable.	Select the runway in use.
Theorise	Extract general principles from a particular experience.	Theorise the resolution of conflict between a slow and a fast aircraft.
Validate	Make valid, ratify, prove valid, show or confirm the validity of something.	Validate one radar vectoring option to expedite the traffic.

(b) Application of taxonomy levels to practically based objectives

(1) Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods, e.g. hands-on, plotting on charts, etc.

(2) Objectives at taxonomy level 3 or higher, for the ATM subject (basic and rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radiotelephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part-task trainer or a simulator.

(3) ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part-task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.

(4) ATM level 5 objectives should be achieved through the use of a simulator.

AMC2 ATCO.D.010(a) Composition of initial training

LIST OF ABBREVIATIONS

For the purposes of:

— AMC1 ATCO.D.010(a)(1) Composition of initial training — BASIC TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

— ~~AMC1 ATCO.D.010(a)(2)(i) Composition of initial training — AERODROME CONTROL VISUAL RATING (ADV) TRAINING — SUBJECT OBJECTIVES AND TRAINING OBJECTIVES;~~

— AMC1 ATCO.D.010(a)(2)(ii) Composition of initial training — AERODROME CONTROL ~~INSTRUMENT~~ RATING ~~FOR TOWER ADI~~ (~~TWR~~ADC) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

— AMC1 ATCO.D.010(a)(2)(iii) Composition of initial training — APPROACH CONTROL PROCEDURAL RATING (APP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

— AMC1 ATCO.D.010(a)(2)(iii~~v~~) Composition of initial training — AREA CONTROL PROCEDURAL RATING (ACP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES;

— AMC1 ATCO.D.010(a)(2)(iv) Composition of initial training — APPROACH CONTROL SURVEILLANCE RATING (APS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

— AMC1 ATCO.D.010(a)(2)(v~~i~~) Composition of initial training — AREA CONTROL SURVEILLANCE RATING (ACS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

the following abbreviations apply:

Abbreviation	**Stands for / Means~~ing~~**
A-RNP	Advanced Required Navigation Performance
A/B (Type)	A and B type approaches (classifications)
ABAS	Aircraft-based Augmentation System
ABES	Abnormal and Emergency Situations (Subject)
ACARS	Aircraft Communications Addressing and Reporting System
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACFTB	Aircraft — Basic Training (subject)
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACP	Area Control Procedural Rating
ACS	Area Control Surveillance Rating
ADF	Automatic Direction-Finding System
ADC	Aerodrome Control
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADS-B	Automatic Dependent Surveillance — Broadcast
ADS-C	Automatic Dependent Surveillance — Contract
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air-Filed Flight Plan
AFTN	Aeronautical ~~f~~Fixed ~~t~~Telecommunication ~~n~~Network
AGA	Aerodromes
AIC	Aeronautical Information Circular

AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMAN	Arrival Manager
AMC	Acceptable Means of Compliance
ANS	Air Navigation Services
AP/FD	Autopilot/Flight Director
APM	Approach Path Monitor
APP	Approach Control/Centre/Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management
ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Coordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATMB	Air Traffic Management — Basic Training (subject)
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
Beidou	Chinese ~~N~~navigation ~~S~~satellite ~~S~~system

BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear-Air Turbulence
CBA	Cross-Border Area
CBT	Computer-Based Training
CCO	Continuous Climb Operations
CDO	Continuous Descent Operations
CDR	Conditional Route
CEM	Collaborative Environmental Management
CISM	Critical Incident Stress Management
CPDLC	Controller–Pilot Data Link Communications
CPL	Current Flight Plan
CWP	Controller Working Position
DA	Decision Altitude
DFTI	Distance from Touchdown Indicator
DH	Decision Height
DMAN	Departure Manager
DME	Distance-Measuring Equipment
Doc	Document
EASA	European Union Aviation Safety Agency
EAT	Expected Approach Time
~~EATCHIP~~	~~European Air Traffic Control Harmonisation and Integration Programme~~
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Navigation Overlay Service
EGPWS	Enhanced Ground Proximity Warning System
EQPS	Equipment and Systems (subject)
EQPSB	Equipment and Systems — Basic Training (subject)
ETF	European Transport Workers' Federation
EU	European Union

EU ETS	European Union Emissions Trading Scheme
EUROCONTROL	European Organisation for the Safety of Air Navigation
FA	Fix to Altitude
FAB	Functional Airspace Block
FAF	Final Approach Fix
FAP	Final Approach Point
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan or Filed Flight Plan
FRA	Free-Route Airspace
FRT	Fixed Radius Transition
FTE	Flight Technical Error
FUA	Flexible Use of Airspace
Galileo	European ~~S~~satellite ~~N~~navigation ~~S~~system
GBAS	Ground-Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
HF	High Frequency
HFACS	Human Factors Analysis & Classification System
HUM	Human Factors (subject)
HUMB	Human Factors — Basic Training (subject)
IACA	International Air Carrier Association
IAF	Initial Approach Fix
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organiz~~s~~ation~~s~~
IF	Intermediate Approach Fix

IFALPA	International Federation of Airline Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
INTRB	Introduction to the course — Basic Training (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union
LAM	Local Area Multilateration
LAW	Aviation Law (subject)
LAWB	Aviation Law — Basic Training (subject)
LDA	Landing Distance Available
~~locLNAV~~	~~Lateral Navigation~~
LOA	Letter of Agreement
LOC	Localiser
LOPs	Local Operating Procedures
LPV	Localiser Performance with Vertical guidance
MAPt	Missed Approach Point
MCMF	Multi-Constellation, Multi-Frequency
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
METB	Meteorology — Basic Training (subject)
MLAT	Multilateration
Mode A	SSR identification code
Mode C	SSR Mode C (~~P~~pronounced: Mode Charlie)
Mode S	Mode Select

MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium-Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NAVB	Navigation — Basic Training (subject)
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
NPA	Non-Precision Approach
NSE	Navigation System Error
OCA	Obstacle Clearance Altitude
OCH	Obstacle Clearance Height
OJT	On-the-Job Training
OLDI	On-Line Data Interchange
PA	Precision Approach
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance-Based Navigation
PCN	Pavement Classification Number
PCP ~~IR~~	Pilot Common Project ~~Implementing Rule~~
PDE	Path Definition Error
PEAR (model)	People who do the job / Environment in which they work / Actions they perform / Resources necessary to complete the job
PEN	Professional Environment (subject)
PENB	Professional Environment — Basic Training (subject)
PSR	Primary Surveillance Radar
PTP	Part-Time Practice
QDM	Inbound magnetic bearing to the station
QDR	Outbound magnetic bearing from the station
QFE	Atmospheric pressure at aerodrome elevation

QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RA	Resolution Advisory (TCAS)
RAIM	Receiver Autonomous Integrity Monitoring
RCC	Rescue Coordination Centre
RF	Radius to Fix
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP APCH	Required Navigation Performance Approach
RNP AR APCH	Required Navigation Performance Authorisation Required Approach
RNP AR DEP	Required Navigation Performance Authorisation Required Departure
ROC	Rate of Climb
RPAS	Remotely Piloted Aircraft System
~~RPL~~	~~Stored Flight Plan~~
RTF	Radiotelephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SDPS	Surveillance Data Processing System
SELCAL	Selective Calling
SES	Single European Sky
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SIB	Safety Information Bulletin
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMAN	Surface Management
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SOPs	Standard Operating Procedures

SPECI	Aviation Selected Special Weather Report
SSR	Secondary Surveillance Radar
STAR	Standard Instrument Arrival (Route)
STCA	Short-Term Conflict Alert
SVFR	Special Visual Flight Rules
TA	Traffic Alert (TCAS)
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TAWS	Terrain Awareness and Warning System
TBO	Trajectory-Based Operations
TCAC	Tropical Cyclone Advisory Centre
TCAS	Traffic Alert and Collision Avoidance System
TODA	Take-Off Distance Available
TORA	Take-Off Run Available
TRA	Temporary Reserved Airspace or Temporary Reserved Area
TRM	Team Resource Management
TSA	Temporary Segregated Area
TSE	Total System Error
TWR	Tower Control Unit (Aerodrome Control Tower)
UAS	Unmanned Aircraft System
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency
UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre

WAFS	World Area Forecast System
WAM	Wide Area Multilateration
WGS-84	World Geodetic System 84
WMO	World Meteorological Organization

AMC1 ATCO.D.010(a)(1) Composition of initial training

BASIC TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

(a) The general principles that apply to this AMC are contained in AMC1 ATCO.D.010(a).

(b) Basic training should contain the following ~~subject objectives and~~ training objectives that are associated with the subjects, topics and subtopics contained in Appendix 2 (Basic training) to Annex I to Commission Regulation (EU) 2015/340~~ — Basic training~~.

(c) Subjects, topics and subtopics from Appendix 2 to Annex I to Commission Regulation (EU) 2015/340 are repeated in this AMC for the convenience of the reader and do not form part of it.

SUBJECT 1: INTRODUCTION TO THE COURSE

~~The subject objective is:~~
~~Learners shall know and understand the training programme that they will follow and how to obtain the appropriate information, and recognise the potential for development of their careers in ATC.~~

TOPIC INTRB 1 — COURSE MANAGEMENT			
Subtopic INTRB 1.1 — Course introduction			
BASIC INTRB 1.1.1	Explain the aims and main objectives of the course.	2	
Subtopic INTRB 1.2 — Course administration			
BASIC INTRB 1.2.1	State how the course is administered.	1	
Subtopic INTRB 1.3 — Study material and training documentation			
BASIC INTRB 1.3.1	Use appropriate documents and their sources for the course.	3	*Optional content: training documentation, library, CBT library, web, learning management server*
BASIC INTRB 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*

TOPIC INTRB 2 — INTRODUCTION TO THE ATC TRAINING COURSE			
Subtopic INTRB 2.1 — Course content, methodology and organisation			
BASIC INTRB	State the different training methods used during the course.	*1*	Theoretical training, practical training, self-study, types of training events

TOPIC INTRB 2 — INTRODUCTION TO THE ATC TRAINING COURSE			
2.1.1			
BASIC INTRB 2.1.2	State the subjects covered by the course and their purpose.	1	
BASIC INTRB 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*
BASIC INTRB 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*
BASIC INTRB 2.1.5	Appreciate appropriate learning techniques.	3	How the influence of interactive techniques can lead to improved learning
Subtopic INTRB 2.2 — Training ethos			
BASIC INTRB 2.2.1	Recognise the feedback mechanisms available.	1	*Optional content: instructor discussions, training progress, assessment, examinations, results, briefing, debriefing*
BASIC INTRB 2.2.2	Describe the positive effect of working and learning together with course participants.	2	Teamwork in theoretical and practical training
Subtopic INTRB 2.3 — Assessment process			
BASIC INTRB 2.3.1	Describe the assessment process.	2	

TOPIC INTRB 3 — INTRODUCTION TO THE ATCO'S FUTURE			
Subtopic INTRB 3.1 — Job prospects			
BASIC INTRB 3.1.1	Recognise an ATCO's working environment.	1	Area control unit, approach control unit, aerodrome control unit
BASIC INTRB 3.1.2	Recognise career developments.	1	*Optional content: OJT instructor, supervisor, operational managerial posts, non-operational posts*

SUBJECT 2: AVIATION LAW

~~The subject objective is:~~

~~Learners shall apply the regulations governing the rules of the air, airspace and flight planning and explain their development or, where applicable, their incorporation into national legislation.~~

TOPIC LAWB 1 — INTRODUCTION TO AVIATION LAW			
Subtopic LAWB 1.1 — Relevance of aviation law			
BASIC LAWB 1.1.1	State the necessity for air law, the sources and development of aviation law.	1	Relevant EU legislation, ICAO Convention *Optional content: ICAO Annex 2, national aviation law*
~~BASIC LAWB 1.1.2~~	~~Name the key national and international aviation organisations.~~	~~1~~	~~*Optional content: ICAO, ECAC, EASA, EUROCONTROL, national authority*~~
BASIC LAWB 1.1.~~3~~2	Describe the impact key international and national ~~these~~ organisations have on ATC and their interaction with each other.	2	ICAO, EASA, EUROCONTROL, national organisations
TOPIC LAWB 2 — INTERNATIONAL ORGANISATIONS			
Subtopic LAWB 2.1 — ICAO			
BASIC LAWB 2.1.1	Explain the purpose and function of ICAO.	2	
BASIC LAWB 2.1.2	Describe the methods by which ICAO notifies and implements legislation.	2	SARPs, PANS, ICAO annexes, ICAO documents *Optional content: regional offices*
Subtopic LAWB 2.2 — European and other agencies			
BASIC LAWB 2.2.1	Explain the purpose and function~~s~~ of EUROCONTROL.	2	Network Manager function
BASIC LAWB 2.2.2	Explain the purpose and function~~s~~ of EASA.	2	
BASIC LAWB 2.2.3	State the purpose and function of other international agencies and their relevance to air traffic operations.	1	*Optional content: ECAC, EU, ITU, CANSO, WMO*
Subtopic LAWB 2.3 — Aviation associations			
BASIC LAWB 2.3.1	State the purpose of controller, pilot, airline and airspace user associations and their interaction with ATC.	1	*Optional content: IFATCA, IFALPA, IATA, AEA, IAOPA, IACA, military services, ETF, ATCEUC*
TOPIC LAWB 3 — NATIONAL ORGANISATIONS			
Subtopic LAWB 3.1 — ~~Purpose and function~~ National authorities			
BASIC LAWB 3.1.1	Describe the purpose and function of appropriate national agencies and their relevance to air traffic operations.	2	*Optional content: civil aviation administration agencies, government agencies*

TOPIC LAWB 3 — NATIONAL ORGANISATIONS			
Subtopic LAWB 3.2 — National legislative procedures			
BASIC LAWB 3.2.1	Recognise ~~Describe the means by which~~ how legislation is implemented, notified and updated.	~~2~~ 1	~~ICAO Annex 15~~ ~~*Optional content: AIS, AIPs, AIRAC, SUPs, AICs, NOTAMs, integrated aeronautical information package, national legislation, letters of agreement, operations manual*~~
~~BASIC LAWB 3.2.2~~	~~Recognise the information contained in the different parts of the AIP.~~	~~1~~	
Subtopic LAWB 3.3 — Competent authority			
BASIC LAWB 3.3.1	Name the competent authorities~~y~~ responsible for ATCO licensing and ANSP oversight. ~~enforcing legislation and operational procedures.~~	1	
BASIC LAWB 3.3.2	State ~~Describe~~ how the competent authority carries out its safety oversight ~~regulation~~ responsibilities.	~~2~~ 1	
Subtopic LAWB 3.4 — National aviation associations			
BASIC LAWB 3.4.1	State the purpose of national controller, pilot, airline and airspace user associations.	1	

TOPIC LAWB 4 — ATS SAFETY MANAGEMENT			
Subtopic LAWB 4.1 — Safety regulation			
BASIC LAWB 4.1.1	Describe the need for safety regulation.	2	Regulation (EU) 2018/1139[2] *Optional content: Regulation (EU) 2017/373[3], national regulations*
BASIC LAWB 4.1.2	Describe the general principles of ~~the~~ safety regulation. ~~organisation.~~	2	~~Safety regulation~~ *Optional content: Regulation (EU) 2017/373, national regulations*
BASIC LAWB 4.1.3	Explain the impact of safety regulation on the controller.	2	*Optional content: Regulation (EU) 2015/340[4], ~~on ATCO licensing~~ Regulation (EU) 2017/373*
Subtopic LAWB 4.2 — Safety management system			

[2] Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1).

[3] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).

[4] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1).

TOPIC LAWB 4 — ATS SAFETY MANAGEMENT			
BASIC LAWB 4.2.1	Explain the regulatory requirements for~~of~~ safety management systems in ATM.	2	Regulation (EU) 2017/373
BASIC LAWB 4.2.2	Explain the principles of ~~the~~ safety management systems.	2	Regulation (EU) 2017/373
BASIC LAWB 4.2.3	Describe the safety assessment methodology.	2	Regulation (EU) 2017/373 *Optional content: EATMP Air navigation system safety assessment methodology, national regulations*

TOPIC LAWB 5 — RULES AND REGULATIONS			
Subtopic LAWB 5.1 — Units of measurement			
BASIC LAWB 5.1.1	List ~~Describe~~ the units of measurement used in aviation.	~~2~~ 1	Council Directive 80/181/EEC on units of measurement[5], ICAO Annex 5
Subtopic LAWB 5.2 — ATCO licensing/certification			
BASIC LAWB 5.2.1	Explain the ATCO licensing/certification process.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~, ~~A~~approved training courses; ATCO licences, ratings and endorsements *Optional content: national processes*
BASIC LAWB 5.2.2	Explain the privileges and limitations of controller licences.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~
Subtopic LAWB 5.3 — Overview of ANS ~~and ATS~~			
BASIC LAWB 5.3.1	Differentiate between ANS~~the Air Navigation Services~~.	2	Regulation (EU) 2018/1139, Regulation (EC) No 549/2004[6]
Subtopic LAWB 5.4 — Overview of ATS			
BASIC LAWB 5.~~3.2~~4.1	State ~~Explain~~ the considerations which determine the need for ~~the~~ ATS.	~~2~~ 1	~~ICAO Annex 11~~ Regulation (EU) 2017/373
BASIC LAWB 5.~~3.3~~ 4.2	Differentiate between ~~the~~ ATS.	2	ATCS, ADVS, FIS, ALRS
BASIC LAWB 5.~~3.4~~4.3	Explain the objectives of ATS.	2	Regulation (EU) No 923/2012[7]

[5] Council Directive 80/181/EEC of 20 December 1979 on the approximation of the laws of the Member States relating to units of measurement and on the repeal of Directive 71/354/EEC (OJ L 39, 15.2.1980, p. 40).

[6] 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) — Statement by the Member States on military issues related to the single European sky (OJ L 96, 31.3.2004, p. 1).

[7] Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

TOPIC LAWB 5 — RULES AND REGULATIONS			
Subtopic LAWB 5.5 — Overview of Aeronautical Information Management (AIM)			
BASIC LAWB 5.5.1	Describe the means by which aeronautical information is notified, updated and disseminated.	2	Regulation (EU) 2017/373 *Optional content: AIS, integrated aeronautical information package (AIPs, AIRAC, SUPs, AICs, NOTAMs), ICAO Annex 15*
BASIC LAWB 5.5.2	Recognise the information contained in the different parts of the AIP.	1	
Subtopic LAWB 5.64 — Rules of the air			
BASIC LAWB 5.64.1	Explain the rules of the air.	2	Regulation (EU) No 923/2012, flight over the high seas, applicability and compliance, general rules and collision avoidance
BASIC LAWB 5.64.2	State the published ~~any notified~~ differences with ICAO.	1	Regulation (EU) No 923/2012 *Optional content: Supplements to ICAO Annex 2 and ICAO Annex 11*
BASIC LAWB 5.64.3	Appreciate the influence of relevant flight rules on ATC.	3	General flight rules, instrument flight rules, visual flight rules
BASIC LAWB 5.64.4	Appreciate the differences between flying in accordance with VFR, special VFR and IFR~~,~~ in VMC and IMC.	3	Regulation (EU) No 923/2012
Subtopic LAWB 5.57 — Airspace and ATS routes			
BASIC LAWB 5.57.1	Explain airspace classification.	2	Regulation (EU) No 923/2012
BASIC LAWB 5.57.2	Differentiate between the different types of airspace.	2	*Optional content: control zones, control areas, airways, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.*
BASIC LAWB 5.57.3	Differentiate between the different types of ATS routes.	2	Airway, arrival route, departure route, advisory route, controlled route, uncontrolled route, etc.
BASIC LAWB 5.57.4	Decode information from aeronautical charts.	3	~~*Optional content: control zones, control areas, ATS routes, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.*~~
Subtopic LAWB 5.68 — Flight plan			
BASIC LAWB 5.68.1	Explain the functions of a flight plan.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC LAWB 5.68.2	Explain the different types of flight plans and associated update messages.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC LAWB 5.68.3	Explain the pilot's responsibilities in relation to adherence to flight plan.	2	Inadvertent changes, intended changes, position reporting

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TOPIC LAWB 5 — RULES AND REGULATIONS			
BASIC LAWB 5.~~6~~8.4	Describe flight plan submission and distribution processes~~ing~~.	2	Regulation (EU) No 923/2012 ~~*Optional content: AFTN, IFPS*~~
Subtopic LAWB 5.~~7~~9 — Aerodromes			
BASIC LAWB 5.~~7~~9.1	Describe the general design and layout of an aerodrome.	2	Runway(s), taxiways, apron, movement area, manoeuvring area, designated positions on an aerodrome
BASIC LAWB 5.~~7~~9.2	Explain the numbering system and orientation of runways.	2	Regulation (EU) No 139/2014[8]
BASIC LAWB 5.~~7~~9.3	Differentiate between different types of aerodromes.	2	Controlled, uncontrolled *Optional content: military, international, regional*
BASIC LAWB 5.~~7~~9.4	Describe designated positions in the traffic circuit.	2	
BASIC LAWB 5.~~7~~9.5	List the factors affecting the selection of runway in use.	1	
Subtopic LAWB 5.~~8~~10 — Holding procedures for IFR flights			
BASIC LAWB 5.~~8~~10.1	Describe the purpose of holding.	2	Traffic management, weather, pilot request, ~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, ICAO Doc 8168 *Optional content: ICAO Doc 4444*
BASIC LAWB 5.~~8~~10.2	Describe the types of holding patterns.	2	Published, non-published
BASIC LAWB 5.~~8~~10.3	Describe an ICAO holding pattern.	2	ICAO Doc 8168 — Parts of an IFR holding pattern, entry/exit procedures, dimensions of patterns, protected airspace, holding areas, alignment, rates of turns, holding times, expect further clearance, Expected Approach Times (EATs)
BASIC LAWB 5.~~8~~10.4	Describe the factors affecting the holding pattern.	2	Effect of speed, effect of level used, effect of navigation aid in use, turbulence
Subtopic LAWB 5.~~9~~11 — Holding procedures for VFR flights			
BASIC LAWB 5.~~9~~11.1	Describe VFR holding.	2	

[8] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1).

SUBJECT 3: AIR TRAFFIC MANAGEMENT

~~The subject objective is:~~
~~Learners shall describe the basic principles of air traffic management and apply basic operational procedures.~~

TOPIC ATMB 1 — AIR TRAFFIC MANAGEMENT			
Subtopic ATMB 1.1 — Application of units of measurement			
BASIC ATMB 1.1.1	Apply the units of measurement appropriate to ATM.	3	
Subtopic ATMB 1.2 — Air traffic control (ATC) service			
BASIC ATMB 1.2.1	Define ATC service.	1	Regulation (EU) No 923/2012
BASIC ATMB 1.2.2	Explain the division of ~~the~~ ATC service.	2	Regulation (EC) No 549/2004, Regulation (EU) 2017/373 ~~ICAO Annex 11~~
BASIC ATMB 1.2.3	Explain the responsibility for the provision of ~~the~~ ATC service.	2	~~ICAO Annex 11~~ Regulation (EU) 2017/373
BASIC ATMB 1.2.4	Differentiate between the different methods of providing ATC services.	2	Aerodrome, surveillance, procedural
Subtopic ATMB 1.3 — Flight information service (FIS)			
BASIC ATMB 1.3.1	Define FIS.	1	Regulation (EU) No 923/2012
BASIC ATMB 1.3.2	Describe the scope of ~~the~~ FIS.	2	Regulation (EU) No 923/2012
BASIC ATMB 1.3.3	Explain the responsibility for the provision of ~~the~~ FIS.	2	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373
BASIC ATMB 1.3.4	State the methods of transmitting information.	1	RTF, data link, ATIS, VOLMET ~~*Optional content: RTF, data link, ATIS, VOLMET, etc.*~~
BASIC ATMB 1.3.5	List the content of ATIS and VOLMET.	1	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 ~~ICAO Annex 3~~ *Optional content: meteorological data obtained by data link, ICAO Annex 3*
BASIC ATMB 1.3.6	Issue information to aircraft.	3	*Optional content: SIGMET, serviceability of navaids, weather, flight safety information, essential traffic, essential local traffic, information related to aerodrome conditions, etc.*
Subtopic ATMB 1.4 — Alerting service (ALRS)			
BASIC ATMB	Define ALRS.	1	Regulation (EU) No 923/2012

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TOPIC ATMB 1 — AIR TRAFFIC MANAGEMENT			
1.4.1			
BASIC ATMB 1.4.2	Describe the scope of ~~the~~ ALRS.	2	Regulation (EU) No 923/2012, ICAO Annex 11
BASIC ATMB 1.4.3	Explain the responsibility for the provision of ~~the~~ ALRS.	2	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012
BASIC ATMB 1.4.4	Differentiate between the phases of emergency.	2	Uncertainty, alert, distress
BASIC ATMB 1.4.5	Describe the organisation of an ALRS.	2	Responsibilities, local organisation
BASIC ATMB 1.4.6	Describe the cooperation between units providing ~~the~~ alerting services and the SAR units.	2	
BASIC ATMB 1.4.7	Differentiate between distress and urgency signals.	2	Mayday, Pan Pan, Pan Pan Medical *Optional content: visual signals, etc.*
Subtopic ATMB 1.5 — Air traffic advisory service			
BASIC ATMB 1.5.1	Define air traffic advisory service.	1	Regulation (EU) No 923/2012
BASIC ATMB 1.5.2	State ~~Describe~~ the scope of ~~the~~ air traffic advisory service.	~~2~~ 1	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373
BASIC ATMB 1.5.3	Explain the responsibility for the provision of ~~the~~ air traffic advisory service.	2	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373
~~BASIC ATMB 1.5.4~~	~~State to which flights air traffic advisory service shall be provided.~~	~~1~~	~~ICAO Doc 4444~~
Subtopic ATMB 1.6 — ATS system capacity and air traffic flow management (ATFM)			
BASIC ATMB 1.6.1	Define ATFM.	1	Regulation (EC) No 549/2004
~~BASIC ATMB 1.6.2~~	~~State the scope of capacity management.~~	~~1~~	~~Regulation (EU) No 255/2010[9], Regulation (EU) 2019/123[10], ICAO Doc 4444~~
BASIC ATMB	Describe the scope of air traffic flow and capacity management (ATFCM).	2	Regulation (EU) No 255/2010,

[9] Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management (OJ L 80, 26.3.2010, p. 10).

[10] Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011 (OJ L 28, 31.1.2019, p. 1).

TOPIC ATMB 1 — AIR TRAFFIC MANAGEMENT			
1.6.~~3~~2			Regulation (EU) ~~No~~ 2019/123, ICAO Doc 4444, EUROCONTROL ATFCM Users Manual
BASIC ATMB 1.6.~~4~~3	Explain the responsibility for the provision of ATFCM.	2	Regulation (EU) No 255/2010, Regulation (EU) ~~No~~ 2019/123, ICAO Doc 4444, EUROCONTROL ATFCM Users Manual
BASIC ATMB 1.6.~~5~~4	List ~~Explain~~ the methods of providing ATFCM.	~~2~~ 1	Regulation (EU) No 255/2010, Regulation (EU) ~~No~~ 2019/123, ~~ICAO Doc 4444,~~ EUROCONTROL ATFCM Users Manual
Subtopic ATMB 1.7 — Airspace management (ASM)			
BASIC ATMB 1.7.1	Define ASM.	1	Regulation (EC) No 549/2004 *Optional content: Regulation (EC) No 2150/2005*[11]
BASIC ATMB 1.7.2	Describe the scope of ASM.	2	Regulation (EC) No 2150/2005, Regulation (EU) 2019/123 *Optional content: FABs, EUROCONTROL Specification for the application of the FUA*
BASIC ATMB 1.7.3	Explain the responsibility for the provision of ASM.	2	Regulation (EC) No 2150/2005, Regulation (EU) 2019/123 *Optional content: EUROCONTROL Specification for the application of the FUA*
BASIC ATMB 1.7.4	State ~~Explain~~ the methods of managing airspace.	~~2~~ 1	Regulation (EC) No 2150/2005, Regulation (EU) 2019/123 *Optional content: Flexible use of airspace, airspace design, CDRs, TSAs*
TOPIC ATMB 2 — ALTIMETRY AND LEVEL ALLOCATION			
Subtopic ATMB 2.1 — Altimetry			
BASIC ATMB 2.1.1	Appreciate the relationship between height, altitude and flight level.	3	QFE, QNH, standard pressure
Subtopic ATMB 2.2 — Transition level			
BASIC ATMB 2.2.1	Appreciate the relationship between transition level, transition altitude and transition layer.	3	Regulation (EU) No 923/2012, ICAO Doc 4444 *Optional content: ICAO Doc 8168*
BASIC ATMB 2.2.2	Calculate the appropriate levels.	3	*Optional content: transition level, transition layer, height, lowest useable flight level, vertical distance to airspace boundaries*
Subtopic ATMB 2.3 — Level allocation			
BASIC ATMB 2.3.1	Describe the cruising level allocation system.	2	Regulation (EU) No 923/2012, table of cruising levels

[11] Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace (OJ L 342, 24.12.2005, p. 20).

TOPIC ATMB 2 — ALTIMETRY AND LEVEL ALLOCATION			
BASIC ATMB 2.3.2	Choose the appropriate levels.	3	Flight levels, altitudes, heights

TOPIC ATMB 3 — RADIOTELEPHONY (RTF)			
Subtopic ATMB 3.1 — RTF general operating procedures			
BASIC ATMB 3.1.1	Explain the need for approved phraseology.	2	
BASIC ATMB 3.1.2	Use approved phraseology.	3	Regulation (EU) No 923/2012 *Optional content: national documents*
BASIC ATMB 3.1.3	Perform communication effectively.	3	Regulation (EU) No 923/2012, communication techniques, readback/verification of readback

TOPIC ATMB 4 — ATC CLEARANCES AND ATC INSTRUCTIONS			
Subtopic ATMB 4.1 — Type and content of ATC clearances			
BASIC ATMB 4.1.1	Define ATC clearance.	1	Regulation (EU) No 923/2012
BASIC ATMB 4.1.2	Describe the contents of an ATC clearance.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC ATMB 4.1.3	Issue appropriate ATC clearances.	3	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, national documents*
Subtopic ATMB 4.2 — ATC instructions			
BASIC ATMB 4.2.1	Define ATC Instructions.	1	Regulation (EU) No 923/2012
BASIC ATMB 4.2.2	Describe the contents of an ATC instruction.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC ATMB 4.2.3	Issue appropriate ATC instructions.	3	Regulation (EU) No 923/2012, ICAO Doc 4444 *Optional content: national documents*

TOPIC ATMB 5 — COORDINATION			
Subtopic ATMB 5.1 — Principles, types and content of coordination			
BASIC ATMB 5.1.1	Explain the principles, types and content of coordination.	2	Regulation (EU) No 923/2012, ICAO Doc 4444, ICAO Annex 11 *Optional content: notification, negotiation, agreement, transfer of flight data and local agreements, etc.*
Subtopic ATMB 5.2 — Necessity for coordination			

TOPIC ATMB 5 — COORDINATION			
BASIC ATMB 5.2.1	Appreciate the need for coordination.	3	*Optional content: ICAO Doc 4444, Regulation (EU) No 923/2012, local procedures, letters of agreement*
BASIC ATMB 5.2.2	Differentiate between transfer of control and transfer of communication procedures.	2	Regulation (EU) 2017/373
Subtopic ATMB 5.3 — Means of coordination			
BASIC ATMB 5.3.1	Describe the means of coordination.	2	*Optional content: data link, telephone, intercom, voice, etc.*
BASIC ATMB 5.3.2	Use the available means for coordination.	3	

TOPIC ATMB 6 — DATA DISPLAY			
Subtopic ATMB 6.1 — Data extraction			
BASIC ATMB 6.1.1	Encode and decode an appropriate selection of standard ICAO abbreviations.	3	*Optional content: ICAO Doc 8585, ICAO Doc 8643, ICAO Doc 7910*
BASIC ATMB 6.1.2	Extract pertinent data from relevant sources to produce a flight progress display.	3	Pilot reports, coordination, data exchange *Optional content: flight plan*
BASIC ATMB 6.1.3	Encode and decode flight plans (including supplementary information).	3	ICAO format, AFTN format
Subtopic ATMB 6.2 — Data management			
BASIC ATMB 6.2.1	Update the situation display to accurately reflect the traffic situation.	3	*Optional content: strip marking symbols, strip movement procedures, electronic data, label*

TOPIC ATMB 7 — SEPARATIONS			
Subtopic ATMB 7.1 — Vertical separation and procedures			
BASIC ATMB 7.1.1	State the vertical separation standards.	1	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*
BASIC ATMB 7.1.2	Explain the vertical separation procedures.	2	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444*
Subtopic ATMB 7.2 — Horizontal separation and procedures			
BASIC ATMB 7.2.1	State the principles of longitudinal separation procedures based on time and distance.	1	Regulation (EU) 2017/373, Regulation (EU) No 923/2012 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444*
BASIC ATMB 7.2.2	State the principles of lateral separation procedures.	1	Regulation (EU) 2017/373, Regulation (EU) No 923/2012 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444*

TOPIC ATMB 7 — SEPARATIONS			
Subtopic ATMB 7.3 — Visual separation			
BASIC ATMB 7.3.1	State the occasions when clearance to fly by maintaining own separation while in VMC can be used.	1	
Subtopic ATMB 7.4 — Aerodrome separation and procedures			
BASIC ATMB 7.4.1	State the aerodrome separation standards.	1	Separation on the manoeuvring area, in the traffic circuit, for departing and arriving aircraft
BASIC ATMB 7.4.2	Explain the aerodrome separation procedures.	2	Regulation (EU) 2017/373, Regulation (EU) No 923/2012 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444*
BASIC ATMB 7.4.3	Define essential local traffic.	1	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~
Subtopic ATMB 7.5 — Separation based on ATS surveillance systems			
BASIC ATMB 7.5.1	Explain the use of ATS surveillance systems in ATS.	2	Separation, identification, monitoring, vectoring, expedition and assistance to traffic *Optional content: ICAO Doc 4444*
BASIC ATMB 7.5.2	Explain the ATS surveillance systems separation standards and procedures.	2	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444*
BASIC ATMB 7.5.3	Explain the methods and procedures for establishing identification.	2	Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*
Subtopic ATMB 7.6 — Wake turbulence separation			
BASIC ATMB 7.6.1	Explain ~~the~~ wake turbulence separation~~s~~.	2	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: EASA SIB 2017-10 'En-route Wake Turbulence Encounters'*

TOPIC ATMB 8 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS			
Subtopic ATMB 8.1 — Airborne safety nets ~~collision avoidance systems~~			
BASIC ATMB 8.1.1	State the European Union requirement for carriage of airborne collision avoidance system.	1	Regulation (EU) No 1332/2011[12]
BASIC ATMB 8.1.2	Explain the main characteristics of airborne safety nets ~~warning systems~~ and their relevance to ATC operations.	2	ACAS, TAWS *Optional content: TCAS, EGPWS, wind shear alerts*
BASIC ATMB 8.1.3	Explain the function of ACAS Traffic Alerts and Resolution Advisories.	2	Regulation (EU) No 1332/2011, ICAO Doc 8168 *Optional content: ~~EUROCONTROL ACAS web page~~ Skybrary Safety Nets*

[12] Commission Regulation (EU) No 1332/2011 of 16 December 2011 laying down common airspace usage requirements and operating procedures for airborne collision avoidance (OJ L 336, 20.12.2011, p. 20).

TOPIC ATMB 8 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS			
BASIC ATMB 8.1.4	List the actions of the pilot in case of TA and RA.	1	Regulation (EU) No 923/2012, ICAO Doc 9863 ~~Regulation (EU) No 1332/2011, ICAO Doc 8168~~
BASIC ATMB 8.1.5	List the ACAS limitations.	1	ICAO Doc 9863 *Optional content: ~~EUROCONTROL ACAS web page~~ Skybrary Safety Nets*
Subtopic ATMB 8.2 — Ground-based safety nets			
BASIC ATMB 8.2.1	Explain the main characteristics of ground-based safety nets and their relevance to ATC operations.	2	*Optional content: STCA, MSAW, APW, APM, Skybrary Safety Nets*

TOPIC ATMB 9 — BASIC PRACTICAL SKILLS			
Subtopic ATMB 9.1 — Traffic management process			
BASIC ATMB 9.1.1	Consider human information-processing in the provision of ATC.	2	Situational awareness, conflict detection, planning, decision-making, prioritisation, execution
BASIC ATMB 9.1.2	Consider the need for verification that actions are carried out.	2	Monitoring
Subtopic ATMB 9.2 — Basic practical skills applicable to all ratings			
BASIC ATMB 9.2.1	Verify that the settings of the working position are appropriate.	3	
BASIC ATMB 9.2.2	Operate the available working position equipment.	3	
BASIC ATMB 9.2.3	Maintain situational awareness by monitoring traffic.	3	Information gathering, scanning, planning
BASIC ATMB 9.2.4	Appreciate priority of actions.	3	
BASIC ATMB 9.2.5	Execute selected plan.	3	
BASIC ATMB 9.2.6	Apply the prescribed procedures for the area of responsibility.	3	*Optional content: LOPs, transfer of control and communication, level allocation, inbound and outbound procedures*
BASIC ATMB 9.2.7	Appreciate relative velocity between aircraft.	3	
BASIC ATMB 9.2.8	Identify separation problems.	3	
BASIC ATMB 9.2.9	Choose the appropriate separation methods.	3	

TOPIC ATMB 9 — BASIC PRACTICAL SKILLS			
BASIC ATMB 9.2.10	Apply separation.	3	*Optional content: vertical, longitudinal, lateral, aerodrome, based on ATS surveillance systems, distances from airspace boundaries*
Subtopic ATMB 9.3 — Basic practical skills applicable to aerodromes			
BASIC ATMB 9.3.1	Perform the basic functions of aerodrome control.	3	
BASIC ATMB 9.3.2	Perform the control of aerodrome traffic.	3	Single runway operations including VFR and IFR traffic
Subtopic ATMB 9.4 — Basic practical skills applicable to surveillance			
~~BASIC ATMB 9.4.1~~	~~Explain the methods and procedures of establishing identification.~~	~~2~~	~~ICAO Doc 4444~~
BASIC ATMB 9.4.~~2~~1	Apply the procedures for establishing identification.	3	Any of the ATS surveillance systems identification methods
BASIC ATMB 9.4.~~3~~2	Estimate the heading for a new track and the distance to the next waypoint.	3	
BASIC ATMB 9.4.43	Apply vectoring techniques.	3	
BASIC ATMB 9.4.~~5~~4	Conduct level changes.	3	*Optional content: cruising level allocation, requested level change, climb/descent to exit level, descent to an altitude or a height*

SUBJECT 4: METEOROLOGY

~~The subject objective is:~~

~~Learners shall describe how meteorology affects ATS operations and aircraft performance, and apply meteorological information in the basic operational procedures of ATS.~~

TOPIC METB 1 — INTRODUCTION TO METEOROLOGY			
Subtopic METB 1.1 — Application of units of measurement			
BASIC METB 1.1.1	Apply the units of measurement appropriate to meteorology.	3	
Subtopic METB 1.2 — Aviation and meteorology			
BASIC METB 1.2.1	Recognise ~~Explain~~ the relevance of meteorology in aviation.	~~2~~ 1	
BASIC METB 1.2.2	Explain the requirements for the provision of meteorological information available to operators, flight crew members, and to air traffic services.	2	Regulation (EU) 2017/373 *Optional content: ICAO Annex 3, ICAO Annex 11*
BASIC METB 1.2.3	State the meteorological hazards to aviation.	1	Turbulence, thunderstorms, icing, micro bursts, squall, macro burst, wind shear, volcanic ash
Subtopic METB 1.3 — Organisation of meteorological service			
BASIC METB 1.3.1	State ~~Name~~ the basic duties~~, organisation and working methods~~ of meteorological offices.	1	*Optional content: WAFS, WAFC, MWO, VAAC, TCAC, SADIS, aerodrome meteorological office, aeronautical meteorological station*
BASIC METB 1.3.2	State the international and national standards for coordination between ATS and MET services.	1	
TOPIC METB 2 — ATMOSPHERE			
Subtopic METB 2.1 — Composition and structure			
BASIC METB 2.1.1	State the composition and structure of the atmosphere.	1	Gases, layers
BASIC METB 2.1.2	Describe the basic characteristics of the atmospheric parameters measured.	2	Temperature, pressure, wind, humidity, density
BASIC METB 2.1.3	List the tools used for the collection of meteorological data.	1	*Optional content: barometer, thermometer, ceilometer, anemometer, weather balloons, transmissometer, radar, satellites, etc.*
Subtopic METB 2.2 — Standard atmosphere			
BASIC METB 2.2.1	Describe the elements of the International Standard Atmosphere (ISA).	2	Temperature, pressure, density
BASIC METB 2.2.2	State the reasons why the ISA has been defined.	1	

TOPIC METB 2 — ATMOSPHERE			
Subtopic METB 2.3 — Heat and temperature			
BASIC METB 2.3.1	Define the processes by which heat is transferred and how the atmosphere is heated.	1	Radiation, convection, advection, conduction, water cycle
BASIC METB 2.3.2	Describe how temperature varies.	2	Adiabatic processes, lapse rates, stability, instability
BASIC METB 2.3.3	State the influencing factors on surface temperature.	1	
Subtopic METB 2.4 — Water in the atmosphere			
BASIC METB 2.4.1	Differentiate between the different processes related to atmospheric moisture.	2	Condensation, evaporation, sublimation, saturation
BASIC METB 2.4.2	Characterise relative humidity, dew point and latent heat.	2	
Subtopic METB 2.5 — Air pressure			
BASIC METB 2.5.1	Describe the relationship between pressure, temperature, density and height.	2	
BASIC METB 2.5.2	Explain the relationship between pressure settings.	2	QFE, QNH, standard pressure
BASIC METB 2.5.3	Explain the effect of air pressure and temperature on altimeter readings and the true altitude of aircraft.	2	
~~BASIC METB 2.5.4~~	~~State how atmospheric pressure is measured.~~	~~1~~	

TOPIC METB 3 — ATMOSPHERIC CIRCULATION			
Subtopic METB 3.1 — General air circulation			
BASIC METB 3.1.1	State the major atmospheric circulation features on the Earth.	1	*Optional content: Hadley cells, high and low belts, polar fronts, westerly winds, upper-level jet streams*
Subtopic METB 3.2 — Air masses and frontal systems			
BASIC METB 3.2.1	State ~~Describe the origin and movement of~~ the typical air masses ~~and their general effect on~~ relevant to European weather.	~~2~~ 1	~~Polar, arctic, tropical, equatorial (maritime and continental)~~ *Optional content: polar, arctic, tropical, equatorial (maritime and continental)*
BASIC METB 3.2.2	Recognise ~~Describe~~ the main isobaric features.	~~2~~ 1	~~Cyclones, anticyclones, ridge, trough~~ *Optional content: cyclones, anticyclones*
BASIC METB 3.2.3	Describe the difference between various fronts and the associated weather.	2	Warm front, cold front, occluded front

TOPIC METB 3 — ATMOSPHERIC CIRCULATION			
Subtopic METB 3.3 — Mesoscale systems			
BASIC METB 3.3.1	Recognise ~~Describe~~ the main phenomena caused by mesoscale systems.	~~2~~ 1	Mountain waves, ~~Föhn, slope and~~ valley winds, thunderstorm, squall line *Optional content: land/sea breezes, tornadoes, land spouts, waterspouts, Föhn, slope winds*
BASIC METB 3.3.2	Explain the relevance of mesoscale systems to aviation.	2	
Subtopic METB 3.4 — Wind			
BASIC METB 3.4.1	Explain the significance of wind phenomena and types.	2	*Optional content: veering, backing, gusting, jet streams, land/sea breezes, Föhn, surface, upper*
BASIC METB 3.4.2	State the means by which ~~how~~ wind is measured.	1	Anemometer, wind sock *Optional content: wind sensor, Beaufort scale, etc.*
BASIC METB 3.4.3	Explain the effect of forces which influence wind.	2	

TOPIC METB 4 — METEOROLOGICAL PHENOMENA			
Subtopic METB 4.1 — Clouds			
BASIC METB 4.1.1	Explain the different conditions for the formation of clouds.	2	
~~BASIC METB 4.1.2~~	~~Recognise different cloud types.~~	~~1~~	
BASIC METB 4.1.~~3~~2	State the different cloud types~~'~~ and their main characteristics.	1	
BASIC METB 4.1.~~4~~3	State how the cloud base and the amount of cloud are measured and/or observed.	1	
BASIC METB 4.1.~~5~~4	Define cloud base and ceiling.	1	
BASIC METB 4.1.~~6~~5	Differentiate between cloud base and ceiling.	2	
Subtopic METB 4.2 — Types of precipitation			
BASIC METB 4.2.1	Explain the significance of precipitation in aviation.	2	
BASIC METB 4.2.2	Describe types of precipitation and their corresponding cloud families.	2	*Optional content: rain, snow, snow grains, hail, ice pellets, ice crystals, drizzle*

TOPIC METB 4 — METEOROLOGICAL PHENOMENA			
Subtopic METB 4.3 — Visibility			
BASIC METB 4.3.1	Explain the causes of atmospheric obscurity.	2	
BASIC METB 4.3.2	Differentiate between different types of visibility.	2	Horizontal visibility, slant visibility, prevailing visibility, RVR
BASIC METB 4.3.3	State the means by which ~~how~~ visibility is measured.	1	
BASIC METB 4.3.4	Explain the significance of visibility in aviation.	2	
Subtopic METB 4.4 — Meteorological hazards			
BASIC METB 4.4.1	Explain the meteorological hazards to aviation.	2	Turbulence, icing, micro bursts, macro burst, wind shear, thunderstorms, volcanic ash *Optional content: squall*
BASIC METB 4.4.2	Describe the effect of meteorological hazards on aviation.	2	

TOPIC METB 5 — METEOROLOGICAL INFORMATION FOR AVIATION			
Subtopic METB 5.1 — Messages and reports			
BASIC METB 5.1.1	Decode the content of weather reports and forecasts.	3	METAR, SPECI, TAF, SIGMET *Optional content: local reports*

SUBJECT 5: NAVIGATION

~~The subject objective is:~~

~~Learners shall explain the basic principles of navigation and use this knowledge in ATS operations.~~

TOPIC NAVB 1 — INTRODUCTION TO NAVIGATION			
Subtopic NAVB 1.1 — Application of units of measurement			
BASIC NAVB 1.1.1	Apply the units of measurement appropriate to navigation.	3	
Subtopic NAVB 1.2 — Purpose and use of navigation			
BASIC NAVB 1.2.1	Explain the need for navigation in aviation.	2	
BASIC NAVB 1.2.2	Characterise navigation methods.	2	*Optional content: historical overview, celestial, on-board, radio, satellites*

TOPIC NAVB 2 — THE EARTH			
Subtopic NAVB 2.1 — Place and movement of the Earth			
BASIC NAVB 2.1.1	Explain the Earth's properties and their effects.	2	Form, size, rotation, revolution in space, seasons, day, night, twilight, units of time, time zones, UTC ~~*Optional content: form, size, rotation, revolution in space, seasons, day, night, twilight, units of time, time zones, UTC*~~
Subtopic NAVB 2.2 — System of coordinates, direction and distance			
BASIC NAVB 2.2.1	Characterise the general principles of a grid system.	2	Latitude/longitude, degrees, minutes, seconds ~~*Optional content: degrees, minutes, seconds, WGS-84, latitude/longitude*~~
BASIC NAVB 2.2.2	Explain direction and distance on a globe.	2	*Optional content: great circle, small circle, rhumb line, cardinal points, intercardinal points*
BASIC NAVB 2.2.3	Estimate position on the Earth's surface.	3	Latitude/longitude ~~*Optional content: latitude/longitude*~~
~~BASIC NAVB 2.2.4~~	~~Estimate distance and direction between two points.~~	~~3~~	
BASIC NAVB 2.2.~~5~~4	State the reference system used in aviation.	1	WGS 84 *Optional content: impact of alternative reference models*
Subtopic NAVB 2.3 — Magnetism			
BASIC NAVB 2.3.1	Explain the general principles of the Earth's magnetism.	2	True ~~N~~north, magnetic ~~N~~north, variation, deviation, inclination, declination
BASIC NAVB 2.3.2	Calculate conversions between the three north designations.	3	True ~~N~~north, magnetic ~~N~~north, compass ~~N~~north

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TOPIC NAVB 3 — MAPS AND AERONAUTICAL CHARTS			
~~Subtopic NAVB 3.1 — Map making and projections~~			
~~BASIC NAVB 3.1.1~~	~~State how the Earth is projected to create a map.~~	~~1~~	~~Types of projection~~
~~BASIC NAVB 3.1.2~~	~~Describe the properties of a map.~~	~~2~~	~~Projection, scale~~
~~BASIC NAVB 3.1.3~~	~~Describe the properties of an ideal map.~~	~~2~~	~~*Optional content: conformality, constant scale, true azimuth, rhumb lines and great circles*~~
~~BASIC NAVB 3.1.4~~	~~State the properties and use of different projections.~~	~~1~~	~~*Optional content: Lambert, Mercator, stereographic*~~
Subtopic NAVB 3.~~2~~1 — Maps and charts used in aviation			
BASIC NAVB 3.~~2~~1.1	Differentiate between the various maps and charts.	2	AIP
BASIC NAVB 3.~~2~~1.2	State the specific use of various maps and charts.	1	
BASIC NAVB 3.~~2~~1.3	Decode symbols and information displayed on maps and charts.	3	*Optional content: chart scale, topographical features, NAV aids, fixes, fly-over and fly-by waypoints, display of true north, magnetic north, variation, etc.*

TOPIC NAVB 4 — NAVIGATIONAL BASICS			
Subtopic NAVB 4.1 — Influence of wind			
BASIC NAVB 4.1.1	Appreciate the influence of wind on the flight path.	3	Heading, track, drift, wind vector *Optional content: triangle of velocities*
Subtopic NAVB 4.2 — Speed			
BASIC NAVB 4.2.1	Explain the relationship between various speeds used in aviation.	2	True air speed, ground speed, indicated air speed (including Mach number)
BASIC NAVB 4.2.2	Appreciate the use of various speeds in ATC.	3	
Subtopic NAVB 4.3 — Visual navigation			
BASIC NAVB 4.3.1	Describe visual navigation.	2	Map reading, visual reference
BASIC NAVB 4.3.2	State the cases where visual navigation is primarily used in commercial aviation.	1	Approach and landing, taxiing *Optional content: visual aids*
Subtopic NAVB 4.4 — Navigational aspects of flight planning			
BASIC NAVB	Describe the navigational aspects affecting flight planning.	2	*Optional content: fuel/time calculations, minimum altitudes, alternative routes,*

TOPIC NAVB 4 — NAVIGATIONAL BASICS			
4.4.1			*weather conditions, ICAO Flight Plan (Item 18 use)*

TOPIC NAVB 5 — INSTRUMENT NAVIGATION			
Subtopic NAVB 5.1 — Ground-based systems			
BASIC NAVB 5.1.1	Explain the basic working principles of ground-based systems.	2	~~VDF, NDB,~~ VOR, DME, ILS *Optional content: VDF, NDB, TACAN*
BASIC NAVB 5.1.2	State the use of ground-based systems.	1	~~VDF, NDB,~~ VOR, DME, ILS *Optional content: VDF, NDB, TACAN*
BASIC NAVB 5.1.3	Characterise the main radio navigation techniques based on ground-based systems.	2	Area navigation, conventional navigation *Optional content: homing, inbound/-outbound tracking, instrument approach procedures, holding, drift assessment*
BASIC NAVB 5.1.4	Explain the accuracy and limitations of ground-based systems.	2	VDF, NDB, VOR, DME, ILS *Optional content: TACAN*
Subtopic NAVB 5.2 — Inertial navigation systems			
BASIC NAVB 5.2.1	Explain the basic working principles, precision and limitations of on-board systems.	2	*Optional content: INS/IRS*
BASIC NAVB 5.2.2	State the use of on-board systems.	1	
Subtopic NAVB 5.3 — Satellite-based systems			
BASIC NAVB 5.3.1	Explain the basic working principles of a satellite positioning system.	2	*Optional content: GPS, GLONASS, Galileo, Beidou*
BASIC NAVB 5.3.2	State the basic principles of the GNSS concept.	1	Basic, ABAS, SBAS, GBAS *Optional content: core constellations, MCMF, integrity, RAIM, accuracy improvement, geometric altitude accuracy*
BASIC NAVB 5.3.3	Explain the limitations of satellite-based systems.	2	GPS, Galileo *Optional content: GLONASS, Beidou, integrity, GPS NOTAMs*
Subtopic NAVB 5.4 — Instrument approach procedures			
BASIC NAVB 5.4.1	Recognise various types of instrument approach using aeronautical charts.	1	Precision Approach (PA), Approach Procedure with Vertical guidance (APV), Non-Precision Approach (NPA)
BASIC NAVB 5.4.2	Differentiate between precision approach and non-precision approach procedures.	2	*Optional content: 2D/3D operations*
BASIC NAVB 5.4.3	Recognise the different minima used during an instrument approach.	1	

TOPIC NAVB 5 — INSTRUMENT NAVIGATION			
BASIC NAVB 5.4.4	Define the terms appropriate to instrument approach minima.	1	OCA/OCH, MDA/MDH and DA/DH
BASIC NAVB 5.4.5	List the instrument~~al~~ approach fixes.	1	IAF, IF, FAF, FAP, MAPt

TOPIC NAVB 6 — PERFORMANCE-BASED NAVIGATION			
Subtopic NAVB 6.1 — Principles and benefits of area navigation			
BASIC NAVB 6.1.1	Explain the basic principles of area navigation.	2	*Optional content: ~~R~~requirement for navigation computer, suitable sensors, ICAO Doc 9613*
BASIC NAVB 6.1.2	State the benefits of area navigation.	1	*Optional content: ICAO Doc 9613*
BASIC NAVB 6.1.3	State the effects of navigational performance accuracy of RNAV systems on the flight.	1	TSE, PDE, NSE, FTE *Optional content: high-quality data, ICAO Doc 9613*
BASIC NAVB 6.1.4	Characterise the main aircraft and avionics functionalities used in area navigation.	2	*Optional content: database, fly-over and fly-by waypoints transitions, managed turns (RF and FRT) path terminators, parallel offset, autopilot/flight director (AP/FD)*
BASIC NAVB 6.1.5	Characterise the navigational functions of FMS.	2	*Optional content: VNAV, LNAV*
Subtopic NAVB 6.2 — Introduction to PBN			
BASIC NAVB 6.2.1	State the general concept of PBN.	1	Components of PBN *Optional content: key enabler, ICAO Doc 9613*
BASIC NAVB 6.2.2	Differentiate between RNAV and RNP.	2	On-board performance monitoring and alerting *Optional content: different generations of aircraft and on-board systems*
BASIC NAVB 6.2.3	State the navigation infrastructure that may be used in PBN.	1	VOR, DME, GNSS *Optional content: functionality IRS/INS*
BASIC NAVB 6.2.4	State the benefits of the PBN concept.	1	*Optional content: global interoperability, limited number of navigation specifications, the PBN concept enables continuous descent operations (CDO) and continuous climb operations (CCO)*
BASIC NAVB 6.2.5	List the navigation specifications and the phases of flight they are applicable to.	1	RNAV 10, RNAV 5, RNAV 2, RNAV 1, RNP 4, RNP 2, RNP 1, RNP 0.3, A-RNP, RNP APCH and RNP AR APCH *Optional content: ICAO Doc 9613*
Subtopic NAVB 6.3 — PBN applications			

TOPIC NAVB 6 — PERFORMANCE-BASED NAVIGATION			
BASIC NAVB 6.3.1	State the navigation applications used in Europe.	1	RNAV 5, RNAV 1, RNP 1 with RF, RNP 0.3, RNP APCH *Optional content: PCP (Regulation (EU) No 716/2014[13])* *(AF #1, AF #3), PBN (Regulation (EU) 2018/1048)[14]*

TOPIC NAVB 7 — DEVELOPMENTS IN NAVIGATION			
Subtopic NAVB 7.1 — Future developments			
BASIC NAVB 7.1.1	State future developments in navigation.	1	*Optional content: 3D VNAV outside FA, trajectory-based operations*

[13] Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan (OJ L 190, 28.6.2014, p. 19).

[14] Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning performance-based navigation (OJ L 189, 26.7.2018, p. 3).

SUBJECT 6: AIRCRAFT

~~The subject objective is:~~

~~Learners shall describe the basic principles of the theory of flight and aircraft characteristics and how these influence ATS operations.~~

TOPIC ACFTB 1 — INTRODUCTION TO AIRCRAFT			
Subtopic ACFTB 1.1 — Application of units of measurement			
BASIC ACFTB 1.1.1	Apply the units of measurement appropriate to aircraft and the principles of flight.	3	
Subtopic ACFTB 1.2 — Aviation and aircraft			
BASIC ACFTB 1.2.1	Explain the relevance of theory of flight and aircraft characteristics in ATS operations.	2	

TOPIC ACFTB 2 — PRINCIPLES OF FLIGHT			
Subtopic ACFTB 2.1 — Forces acting on aircraft			
BASIC ACFTB 2.1.1	Explain the forces acting on an aircraft in flight and their interaction.	2	Lift, thrust, drag, weight during level flight *Optional content: during climb, descent, turn*
BASIC ACFTB 2.1.2	Explain causes and effects of wake turbulence.	2	Induced drag
Subtopic ACFTB 2.2 — Structural components and control of an aircraft			
BASIC ACFTB 2.2.1	Describe the main structural components of an aircraft.	2	Rotary and fixed wing, tail plane, fuselage, flap, aileron, elevator, rudder, landing gear
BASIC ACFTB 2.2.2	Explain how the pilot controls the movements of an aircraft.	2	Rudder, aileron, elevator, throttle, rotary wing controls
BASIC ACFTB 2.2.3	Explain the factors affecting aircraft stability.	2	
BASIC ACFTB 2.2.4	List aircraft design features reducing induced drag.	1	*Optional content: winglet, tip tanks, reducing wing incidence, aspect ratio, etc.*
BASIC ACFTB 2.2.5	Explain aircraft lights and their functions.	2	Regulation (EU) No 923/2012, ICAO Annex 6 *Optional content: position lights, anti-collision lights, taxi lights, navigation lights, stroboscopic lights, landing lights*
Subtopic ACFTB 2.3 — Flight envelope			
BASIC ACFTB 2.3.1	Characterise the critical factors which affect aircraft performance.	2	Maximum speeds, minimum and stall speeds, ceiling, critical angle of attack, maximum ROC

TOPIC ACFTB 3 — AIRCRAFT CATEGORIES
Subtopic ACFTB 3.1 — Aircraft categories

TOPIC ACFTB 3 — AIRCRAFT CATEGORIES			
BASIC ACFTB 3.1.1	List the different categories of aircraft.	1	Fixed wing, rotary wing, balloon, glider, RPAS
Subtopic ACFTB 3.2 — Wake turbulence categories			
BASIC ACFTB 3.2.1	List the wake turbulence categories.	1	~~ICAO Doc 4444~~ Regulation (EU) 2017/373
Subtopic ACFTB 3.3 — ICAO approach categories			
BASIC ACFTB 3.3.1	List the ICAO approach categories.	1	ICAO Doc 8168
Subtopic ACFTB 3.4 — Environmental categories			
BASIC ACFTB 3.4.1	List the ICAO noise classification.		ICAO Annex 16 *Optional content:* *https://www.easa.europa.eu/eaer/topics/technology-and-design/aircraft-noise*

TOPIC ACFTB 4 — AIRCRAFT DATA			
Subtopic ACFTB 4.1 — Recognition			
BASIC ACFTB 4.1.1	Recognise the most commonly used aircraft.	1	
Subtopic ACFTB 4.2 — Performance data			
BASIC ACFTB 4.2.1	State the ICAO aircraft type designators and categories for the most commonly used aircraft.	1	Type designators, approach and wake turbulence categories
BASIC ACFTB 4.2.2	State the standard average performance data of the most commonly used aircraft.	1	Rate of climb/descent, cruising speed, ceiling

TOPIC ACFTB 5 — AIRCRAFT ENGINES			
Subtopic ACFTB 5.1 — Piston engines			
BASIC ACFTB 5.1.1	Explain the operating principles, advantages and disadvantages of the piston engine and propeller.	2	Piston engines, fixed pitch, variable pitch, number of blades
Subtopic ACFTB 5.2 — Jet engines			
BASIC ACFTB 5.2.1	Explain the operating principles, advantages and disadvantages of the jet engine.	2	
BASIC ACFTB 5.2.2	List the different types of jet engines.	1	
Subtopic ACFTB 5.3 — Turboprop engines			
BASIC ACFTB 5.3.1	Explain the operating principles, advantages and disadvantages of the turboprop engine and propeller.	2	

TOPIC ACFTB 5 — AIRCRAFT ENGINES			
Subtopic ACFTB 5.4 — Electric engines			
BASIC ACFTB 5.4.1	Explain the operating principles, advantages and disadvantages of the electric engine.	2	
Subtopic ACFTB 5.45 — Sources of energy used in aviation ~~Aviation fuels~~			
BASIC ACFTB 5.54.1	List the ~~most common~~ sources of energy used in aviation propulsion systems ~~fuels~~.	1	Petroleum-based fuels (Avgas, Jet A-1, Jet B, biokerosene), electrical energy stored or generated on board the aircraft *Optional content: hydrogen cell*

TOPIC ACFTB 6 — AIRCRAFT SYSTEMS AND INSTRUMENTS			
Subtopic ACFTB 6.1 — Flight instruments			
BASIC ACFTB 6.1.1	Explain the basic operating principles and interpretation of the information displayed by flight instruments.	2	Altimeter, air speed indicator, vertical speed indicator, turn and bank indicator, artificial horizon, gyrosyn compass
BASIC ACFTB 6.1.2	Explain the impact of errors and abnormal indications of flight instruments on aircraft operations.	2	*Optional content: pitot-static failures, unreliable gyro source*
Subtopic ACFTB 6.2 — Navigational instruments			
BASIC ACFTB 6.2.1	Describe the basic on-board operating principles and interpretation of the information displayed by navigational instruments/systems.	2	*Optional content: ADF, VOR (TACAN), DME, ILS, inertial reference system, satellite-based systems*
Subtopic ACFTB 6.3 — Engine instruments			
BASIC ACFTB 6.3.1	List the vital engine monitoring parameters and their associated instruments.	1	*Optional content: oil pressure and temperature, engine temperature, rpm, fuel state and flow, battery resource*
Subtopic ACFTB 6.4 — Aircraft elements and systems			
BASIC ACFTB 6.4.1	Explain the use of the most common aircraft systems.	2	SSR transponder, GPWS, EFIS, flight director, autopilot, FMS, ice protection ~~systems~~, cabin pressurisation, fire detection and extinguishing, emergency oxygen supply systems *Optional content: ADS capability, head-up display, wind shear indicator, weather radar, hydraulic system, electrical system, environmental system*
BASIC ACFTB 6.4.2	Explain the impact of degradation/failure of the most common aircraft systems on aircraft operations.	2	Engine failure *Optional content: hydraulic failure, electrical failure, environmental system failure, degradation of aircraft position source data*
BASIC ACFTB 6.4.3	Explain common aircraft elements and their functions.	2	Aircraft cabin, flight deck, galley, doors, cargo compartments

TOPIC ACFTB 7 — FACTORS AFFECTING AIRCRAFT PERFORMANCE			
Subtopic ACFTB 7.1 — Take-off factors			
BASIC ACFTB 7.1.1	Explain the factors affecting aircraft during take-off.	2	Runway conditions, runway slope, wind, temperature, aerodrome elevation, aircraft mass
Subtopic ACFTB 7.2 — Climb factors			
BASIC ACFTB 7.2.1	Explain the factors affecting aircraft during climb.	2	Speed, mass, wind, wind shear, temperature, cabin pressurisation, air density
Subtopic ACFTB 7.3 — Cruise factors			
BASIC ACFTB 7.3.1	Explain the factors affecting aircraft during cruise.	2	Level, cruising speed, wind, mass, cabin pressurisation
Subtopic ACFTB 7.4 — Descent and initial approach factors			
BASIC ACFTB 7.4.1	Explain the factors affecting aircraft during descent.	2	Wind, speed, rate of descent, aircraft configuration, cabin pressurisation
BASIC ACFTB 7.4.2	Explain the factors affecting an aircraft in a holding pattern.	2	Speed, level, turbulence, icing
BASIC ACFTB 7.4.3	Explain the benefits of continuous descent operations.	2	
Subtopic ACFTB 7.5 — Final approach and landing factors			
BASIC ACFTB 7.5.1	Explain the factors affecting aircraft during final approach and landing.	2	Aircraft configuration, mass, wind, wind shear, aerodrome elevation, runway conditions, runway slope
Subtopic ACFTB 7.6 — Economic factors			
BASIC ACFTB 7.6.1	Explain the economic consequences of ATC changes on the flight profile of an aircraft.	2	Routing, flight level, speed, rates of climb or descent, continuous descent operations (CDO), continuous climb operations (CCO)
Subtopic ACFTB 7.7 — Environmental factors			
BASIC ACFTB 7.7.1	Explain performance restrictions due to environmental considerations.	2	*Optional content: continuous descent operations (CDO), continuous climb operations (CCO), fuel-dumping, noise-abatement procedures, minimum flight levels*

SUBJECT 7: HUMAN FACTORS

~~The subject objective is:~~

~~Learners shall characterise factors which affect personal and team performance.~~

TOPIC HUMB 1 — INTRODUCTION TO HUMAN PERFORMANCE ~~FACTORS~~			
~~Subtopic HUMB 1.1 — Learning techniques~~			
~~BASIC HUMB 1.1.1~~	~~Appreciate appropriate learning techniques.~~	~~3~~	~~How the influence of interactive techniques can lead to improved learning~~
Subtopic HUMB 1.~~2~~1 — Relevance of human factors to~~for~~ ATC			
BASIC HUMB 1.~~3~~1.1	Define human factors.	1	~~*Optional content: ICAO Human Factors Training Manual*~~
BASIC HUMB 1.1.2	Define human performance.	1	
BASIC HUMB 1.~~2.1~~1.3	Explain the relevance ~~and importance~~ of human factors to ATM.	2	Historical background, safety impact on ATM, licensing requirements, incidents
BASIC HUMB 1.~~3.2~~1.4	Recognise the evolution of human performance during an ATCO's career. ~~Explain the relationship between human factors and the aviation environment.~~	2	*Optional content: ~~ICAO Human Factors Training Manual, visits to the simulator and operational room, SHELL model, PEAR model~~ Regulation (EU) 2015/340; experience; initial, unit, continuation and development training*
~~Subtopic HUMB 1.3 — Human factors and ATC~~			
~~BASIC HUMB 1.3.3~~	~~Explain the concept of systems.~~	~~2~~	~~People, procedures, equipment~~
~~BASIC HUMB 1.3.4~~	~~Explain ATM in systems terms.~~	~~2~~	
~~BASIC HUMB 1.3.5~~	~~Explain the consequences of a system failure in ATS.~~	~~2~~	
~~BASIC HUMB 1.3.6~~	~~Explain the need for matching human and equipment.~~	~~2~~	~~*Optional content: ICAO Human Factors Training Manual*~~
~~BASIC HUMB 1.3.7~~	~~Explain the information requirement of ATC.~~	~~2~~	~~Relevant, timely, accurate~~
~~BASIC HUMB 1.3.8~~	~~Describe the role of the human in the evolution of ATC.~~	~~2~~	~~*Optional content: history of ATC, airspace, communications, radar, advanced ATS systems, the future of ATC*~~
~~BASIC HUMB 1.3.9~~	~~Explain the importance of situational awareness for decision-making.~~	~~2~~	

TOPIC HUMB 2 — HEALTH AND WELL-BEING			
Subtopic HUMB 2.1 — Fitness for duty			
BASIC HUMB 2.1.1	Recognise the effect of health and well-being on fitness for duty.	1	
BASIC HUMB 2.1.2	List the reasons for provisional inability to exercise the privileges of the ATCO licence.	1	Regulation (EU) 2015/340
BASIC HUMB 2.1.3	Recognise signs of lack of personal fitness.	1	Cognitive and physical fitness
BASIC HUMB 2.1.4	Describe good practices that contribute to maintaining fitness for duty.	2	*Optional content: fitness, diet*
Subtopic HUMB 2.2 — Stress and fatigue			
BASIC HUMB 2.2.1 ~~2.6.1~~	Define stress.	1	Regulation (EU) 2017/373~~*Stress definition Optional content: EATCHIP Human Factors Module — Stress*~~
BASIC HUMB 2.2.2	Define fatigue.	1	Regulation (EU) 2017/373
BASIC HUMB 2.2.3	Differentiate between stress and fatigue.	2	ICAO Doc 9966
BASIC HUMB 2.2.4	Explain the causal factors of stress and fatigue.	2	*Optional content: EUROCONTROL Fatigue and sleep management*
Subtopic HUMB 2.3 — Substance use and responsibility			
BASIC HUMB 2.3.1	Define psychoactive substance.	1	Regulation (EU) 2017/373
BASIC HUMB 2.3.2	Explain the effect of psychoactive substance use on the individual and on safety.	2	
BASIC HUMB 2.3.3	Describe individual responsibility in terms of psychoactive substance use.	2	Regulation (EU) 2017/373
TOPIC HUMB ~~2~~3 — HUMAN PERFORMANCE			
Subtopic HUMB ~~2~~3.1 — Individual behaviour			
BASIC HUMB 3.1.1	Define human behaviour.	1	
BASIC HUMB ~~2.1.1~~ 3.1.2	Explain the differences and commonalities that exist among people.	2	*Optional content: attitude, cultural, language, motivation*

TOPIC HUMB ~~2~~3 — HUMAN PERFORMANCE			
BASIC HUMB 3.1.3	Describe the reasons for complacency and the associated effects.	2	Safety, working relationship — team
BASIC HUMB ~~2.1.3~~ 3.1.4	Describe ~~Explain~~ the reasons for ~~dangers of~~ overconfidence and the associated effects. ~~complacency.~~	2	Safety, working relationship — team
BASIC HUMB ~~2.1.2~~ 3.1.5	Explain the dangers of boredom.	2	
~~BASIC HUMB 2.1.4~~	~~Explain the dangers of fatigue.~~	~~2~~	~~Sleep disturbance, heavy workload~~
Subtopic HUMB ~~2~~3.2 — Safety culture and professional conduct			
BASIC HUMB 3.2.1	Recognise professional conduct in the workplace.	1	*Optional content: professionalism, attitude, communication, teamwork*
BASIC HUMB ~~2.2.1~~ 3.2.2	Describe ~~Characterise the role of~~ how the air traffic controller contributes to a ~~for~~ positive safety culture.	2	*Optional content: attitude towards safety, punctuality, rigour, adherence to rules and regulations, teamwork attitude, etc.*
BASIC HUMB 3.2.3	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*
~~BASIC HUMB 2.2.2~~	~~Describe the need for professional standards in ATC.~~	~~2~~	~~*Optional content: adherence to rules and regulations, etc.*~~
~~BASIC HUMB 2.2.3~~	~~Appreciate the needed basic professional attitude appropriate to a high level of safety.~~	~~3~~	~~*Optional content: punctuality, rigour, adherence to rules, teamwork attitude*~~
~~BASIC HUMB 2.2.4~~	~~Describe the impact of responsibility on controllers' action(s).~~	~~2~~	~~Responsibility as a guidance for appropriate action~~
~~BASIC HUMB 2.2.5~~	~~Recognise the different responsibilities of a controller.~~	~~1~~	~~Prospective and retrospective responsibility, guilt and obligation, types of responsibility (moral, welfare, legal, task, role responsibility, etc.)~~
~~**Subtopic HUMB 2.3 — Health and well-being**~~			
~~BASIC HUMB 2.3.1~~	~~Consider the effect of health on performance.~~	~~2~~	~~*Optional content: fitness, diet, drugs, alcohol*~~
~~**Subtopic HUMB 2.4 — Teamwork**~~			
~~BASIC HUMB 2.4.4~~	~~Describe leader style and group interaction.~~	~~2~~	

TOPIC HUMB ~~2~~3 — HUMAN PERFORMANCE			
~~Subtopic HUMB 2.5 — Basic needs of people at work~~			
~~BASIC HUMB 2.5.1~~	~~List basic needs of people at work.~~	~~1~~	~~*Optional content: balance between individual ability and workload, working time and rest periods; adequate physical working conditions, positive working environment*~~
~~BASIC HUMB 2.5.2~~	~~Characterise the factors of work satisfaction.~~	~~2~~	~~*Optional content: money, achievement, recognition, advancement, challenge*~~
~~Subtopic HUMB 2.6 — Stress~~			
~~BASIC HUMB 2.6.1~~	~~Define stress.~~	~~1~~	~~Stress definition~~ ~~*Optional content: EATCHIP Human Factors Module — Stress*~~
~~BASIC HUMB 2.6.2~~	~~Describe stress symptoms and sources.~~	~~2~~	~~Behavioural changes, lifestyle changes, physical symptoms, crisis events, main causes of stress~~ ~~*Optional content: EATCHIP Human Factors Module — Stress*~~
~~BASIC HUMB 2.6.3~~	~~Describe the stages of stress.~~	~~2~~	~~Stress performance curve~~ ~~*Optional content: EATCHIP Human Factors Module — Stress*~~
~~BASIC HUMB 2.6.4~~	~~Appreciate techniques for stress management.~~	~~3~~	~~*Optional content: relaxation techniques, diet and lifestyle, exercise, EATCHIP Human Factors Module — Stress*~~

TOPIC HUMB ~~3~~4 — HUMAN ERROR			
~~Subtopic HUMB 3.1 — Dangers of error~~			
~~BASIC HUMB 3.1.1~~	~~Recognise the dangers of error in ATC.~~	~~1~~	~~*Optional content: Air Traffic Control — Human Performance Factors (Anne Isaac, 1999), Human Factors in Air Traffic Control (V. David Hopkin, 1995)*~~
Subtopic HUMB ~~3.2~~ 4.1 — Definition of human error			
BASIC HUMB ~~3.2.1~~ 4.1.1	Define human error.	1	
Subtopic HUMB ~~3.3~~ 4.2 — Classification of human error			
BASIC HUMB ~~3.3.1~~ 4.2.1	List ~~State~~ the types of errors.	1	*Optional content: slips, lapses, mistakes*
BASIC HUMB ~~3.2.2~~ 4.2.2	Describe the factors which contribute to the occurrence of different types of ~~cause~~ errors and how these may be reduced.	2	Fatigue, lack of skill, misunderstanding, multitasking, lack of information, distraction, lack of work satisfaction
BASIC HUMB ~~3.3.2~~ 4.2.3	Define violations.	1	

TOPIC HUMB ~~3~~4 — HUMAN ERROR			
BASIC HUMB ~~3.3.3~~ 4.2.4	Differentiate between errors and violations of rules and their consequences for the controller.	2	
~~BASIC HUMB 3.3.4~~	~~Describe the three levels of performance according to the Rasmussen model.~~	~~2~~	~~Skill based, knowledge based, rule based~~
~~**Subtopic HUMB 3.4 — Risk analysis and risk management**~~			
~~BASIC HUMB 3.4.1~~	~~Describe risk analysis and risk management of human systems and error.~~	~~2~~	~~Active failures and latent conditions~~ ~~*Optional content: Reason model, HFACS (Human Factors Analysis & Classification System) model, Heinrich Theory*~~
~~BASIC HUMB 3.4.2~~	~~Apply one risk analysis model on error during a case study.~~	~~3~~	
TOPIC HUMB 5 — TEAMWORK			
Subtopic HUMB 5.1 — Teamwork and team roles			
BASIC HUMB 5.1.1	Define teamwork.	1	
BASIC HUMB ~~2.4.1~~ 5.1.2	Describe the differences between social human relations and professional interactions.	2	
BASIC HUMB 5.1.3	Explain the different types of teams in the ATC environment.	2	*Optional content: executive/planner, shift team, sector group or ATC unit team, team with pilots, team with adjacent ATC units*
BASIC HUMB ~~2.4.2~~ 5.1.4	Recognise ~~Describe~~ the different types, roles and characters in a team	~~2~~ 1	~~*Optional content: leader, follower*~~
BASIC HUMB ~~2.4.3~~ 5.1.5	Characterise ~~Appreciate~~ the principles of teamwork.	~~3~~ 2	*Optional content: team membership, team roles, group dynamics, advantages/disadvantages of teamwork, conflicts and their solutions*
TOPIC HUMB ~~4~~6 — COMMUNICATION			
~~**Subtopic HUMB 4.1 — Importance of good communication in ATC**~~			
~~BASIC HUMB 4.1.1~~	~~Appreciate the importance of good communication in ATC.~~	~~3~~	
Subtopic HUMB ~~4.2~~ 6.1 — ~~Communication process~~ Communication in ATC			
BASIC HUMB ~~4.2.1~~ 6.1.1	Define communication.	1	

TOPIC HUMB ~~4~~6 — COMMUNICATION			
BASIC HUMB 6.1.2	List an ATCO's communication partners.	1	
BASIC HUMB 6.1.3 ~~4.3.3~~	Explain ~~Apply~~ good communication practices.	2	Speaking and listening
BASIC HUMB 6.1.4	Differentiate between hearing and listening.	2	
~~BASIC HUMB 4.2.2~~	~~Define the communication process.~~	~~1~~	~~*Optional content: sender, encoder, transmitter, signal, interference, reception, decoder, receiver, feedback*~~
Subtopic HUMB ~~4.3~~ 6.2 — Communication modes			
BASIC HUMB ~~4.3.1~~ 6.2.1	Describe the factors which affect verbal communication.	2	*Optional content: word choice, intonation, speed, tone, distortion, load, expectation, noise, interruption, language competence ~~knowledge (i.e. accent, dialect, vocabulary)~~*
BASIC HUMB ~~4.3.2~~ 6.2.2	Describe the factors which affect non-verbal communication.	2	*Optional content: touch, choice, expectation, noise, interruption*
BASIC HUMB 6.2.3	Describe misunderstandings that may arise during a controller's communication.	2	
~~TOPIC HUMB 5 — THE WORK ENVIRONMENT~~			
~~**Subtopic HUMB 5.1 — Ergonomics and the need for good design**~~			
~~BASIC HUMB 5.1.1~~	~~Define ergonomics.~~	~~1~~	
~~BASIC HUMB 5.1.2~~	~~Recognise the need for good building design.~~	~~1~~	~~*Optional content: light, insulation, decor, space, facilities*~~
~~BASIC HUMB 5.1.3~~	~~Explain the need for good work position design.~~	~~2~~	~~*Optional content: anthropometry (seating, workstation design, input device, etc.)*~~
~~**Subtopic HUMB 5.2 — Equipment and tools**~~			
~~BASIC HUMB 5.2.1~~	~~Characterise the equipment and tools that will be used in simulation in accordance with the SHELL model.~~	~~2~~	~~The physical environment, visual displays, suites, input devices, communications equipment, console profile and layout~~
~~**Subtopic HUMB 5.3 — Automation**~~			
~~BASIC HUMB 5.3.1~~	~~Explain the reasons for automation.~~	~~2~~	
~~BASIC HUMB 5.3.2~~	~~Describe the advantages and constraints of automation.~~	~~2~~	

SUBJECT 8: EQUIPMENT AND SYSTEMS

~~The subject objective is:~~

~~Learners shall explain the basic working principles of equipment that is generally used in ATC and appreciate how this equipment aids the controller in providing safe and efficient ATS.~~

TOPIC EQPSB 1 — ATC EQUIPMENT			
Subtopic EQPSB 1.1 — Main types of ATC equipment			
BASIC EQPSB 1.1.1	Explain the relevance of ATC equipment.	2	CWP, communication equipment, ATS surveillance systems

TOPIC EQPSB 2 — RADIO			
Subtopic EQPSB 2.1 — Radio theory			
~~BASIC EQPSB 2.1.1~~	~~State the principles of radio waves.~~	~~1~~	
BASIC EQPSB 2.1.~~2~~1	Describe the characteristics of radio waves.	2	Propagation, limitations
BASIC EQPSB 2.1.~~3~~2	State the use, characteristics and limitations of frequency bands.	1	Use in ATC, communication, navigation, and surveillance, use and application in the Aeronautical Mobile Service~~, HF, VHF, UHF~~
BASIC EQPSB 2.1.~~4~~3	State the different uses of radio wave spectrum.	1	
Subtopic EQPSB 2.2 — Direction finding			
BASIC EQPSB 2.2.1	State the principles and use of VDF/UDF.	1	VDF/UDF, QDM, QDR, QTE ~~QTF~~ *Optional content: precision of VDF/UDF used in the State system*
~~BASIC EQPSB 2.2.2~~	~~State the precision of VDF/UDF used in the State system.~~	~~1~~	

TOPIC EQPSB 3 — COMMUNICATION EQUIPMENT			
Subtopic EQPSB 3.1 — Radio communications			
BASIC EQPSB 3.1.1	State the use of the radio in ATC.	1	
BASIC EQPSB 3.1.2	Describe the working principles of a transmitting and receiving system.	2	
BASIC EQPSB 3.1.3	Explain the effect of antenna shadowing on RTF communications.	2	
Subtopic EQPSB 3.2 — Voice communication between ATS units/positions and others			
BASIC EQPSB 3.2.1	Describe the use of other voice communications ~~in ATC~~.	2	*Optional content: telephone, interphone, intercom*

TOPIC EQPSB 3 — COMMUNICATION EQUIPMENT			
Subtopic EQPSB 3.3 — Data link communications			
BASIC EQPSB 3.3.1	Explain the use and benefits of ~~C~~controller–~~P~~pilot ~~D~~data Llink ~~C~~communications (CPDLC).	2	
BASIC EQPSB 3.3.2	Explain the use and benefits of aircraft communications addressing and reporting system (ACARS).	2	
Subtopic EQPSB 3.4 — Airline communications			
BASIC EQPSB 3.4.1	State the use of SELCAL.	1	
~~BASIC EQPSB 3.4.2~~	~~Explain the use and benefits of Aircraft Communications Addressing and Reporting System (ACARS).~~	~~2~~	

TOPIC EQPSB 4 — INTRODUCTION TO SURVEILLANCE			
Subtopic EQPSB 4.1 — Surveillance concept in ATS			
BASIC EQPSB 4.1.1	Describe the concept of surveillance for the provision of ATS.	2	

TOPIC EQPSB 5 — RADAR			
Subtopic EQPSB 5.1 — Principles of radar			
BASIC EQPSB 5.1.1	State the principles of radar.	1	
BASIC EQPSB 5.1.2	Recognise the characteristics of radar wavelengths.	1	
BASIC EQPSB 5.1.3	Recognise the use, characteristics and limitations of different radar types.	1	*Optional content: frequency bands, long- and short-range radar, weather radar, high-resolution radar*
Subtopic EQPSB 5.2 — Primary radar			
BASIC EQPSB 5.2.1	Explain the working principles of PSR.	2	
Subtopic EQPSB 5.3 — Secondary radar			
BASIC EQPSB 5.3.1	Explain the working principles of SSR.	2	Mode A, Mode C, Mode S
BASIC EQPSB 5.3.2	Explain SSR code management	2	Discrete, non-discrete codes, special codes
BASIC EQPSB 5.3.3	Explain the effect of antenna shadowing on SSR operation.	2	

TOPIC EQPSB 5 — RADAR			
Subtopic EQPSB 5.4 — Use of radars			
BASIC EQPSB 5.4.1	Explain the use of PSR/SSR in area, approach and aerodrome control. ~~ATC.~~	2	Mode A, Mode C, Mode S, SMR ~~Area, approach, aerodrome, surface movement radar, DFTI~~ *Optional content: DFTI*
BASIC EQPSB 5.4.2	Explain the advantages and disadvantages of PSR/SSR.	2	
~~**Subtopic EQPSB 5.5 — Mode S**~~			
~~BASIC EQPSB 5.5.1~~	~~Explain the principles of Mode S.~~	~~2~~	
~~BASIC EQPSB 5.5.2~~	~~Explain the use of Mode S in ATC systems.~~	~~2~~	

TOPIC EQPSB 6 — AUTOMATIC DEPENDENT SURVEILLANCE			
Subtopic EQPSB 6.1 — Principles of automatic dependent surveillance (ADS)			
BASIC EQPSB 6.1.1	State the different applications of ADS.	1	ADS-B, ADS-C
BASIC EQPSB 6.1.2	Explain the working principles of ADS.	2	
Subtopic EQPSB 6.2 — Use of automatic dependent surveillance (ADS)			
BASIC EQPSB 6.2.1	Describe the use of ADS in ATC.	2	Area, approach, aerodrome, ICAO Doc 4444
BASIC EQPSB 6.2.2	Explain the limitations of ADS.	2	Dependency on GNSS, dependency on airborne equipment

TOPIC EQPSB 7 — MULTILATERATION			
Subtopic EQPSB 7.1 — Principles of multilateration (MLAT)			
BASIC EQPSB 7.1.1	State the different applications of MLAT.	1	*Optional content: ATC, environmental management, airport operations, LAM, WAM*
BASIC EQPSB 7.1.2	Explain the working principles of MLAT.	2	*Optional content: passive and active MLAT*
Subtopic EQPSB 7.2 — Use of multilateration (MLAT)			
BASIC EQPSB 7.2.1	Describe the use of MLAT in ATC.	2	Area, approach, aerodrome
BASIC EQPSB 7.2.2	Explain the limitations of MLAT.	2	Dependency on airborne equipment

TOPIC EQPSB 8 — ~~SURVEILLANCE~~ DATA PROCESSING			
Subtopic EQPSB 8.1 — Surveillance data networking			
BASIC EQPSB 8.1.1	Explain the advantages and disadvantages of different surveillance technologies.	2	Data quality, coverage, refresh rate, reliability, redundancy, cost-effectiveness
BASIC EQPSB 8.1.2	Describe the implementation of Surveillance Data Networks.	2	*Optional content: different technologies/sensors, network*
Subtopic EQPSB 8.2 — Working principles of surveillance data networking			
BASIC EQPSB 8.2.1	State ~~Explain~~ the working principles of surveillance data processing.	~~2~~ 1	~~Track fusion process,~~ Surveillance information presented on CWP
BASIC EQPSB 8.2.2	State other use of processed surveillance data.	1	*Optional content: safety nets, airport operations, environmental management*
Subtopic EQPSB 8.3 — Flight data processing			
BASIC EQPSB 8.3.1	Explain the FDPS core functions.	2	*Optional content: system flight plan, data input, SSR code management, coordination, correlation/decorrelation, etc.*
TOPIC EQPSB 9 — FUTURE EQUIPMENT			
Subtopic EQPSB 9.1 — New developments			
BASIC EQPSB 9.1.1	State the developments in the equipment field for introduction in the near future.	1	
TOPIC EQPSB 10 — AUTOMATION IN ATS			
Subtopic EQPSB 10.1 — Principles of automation			
BASIC EQPSB 10.1.1	Describe the principles of automation in communication and data links in ATS.	2	
Subtopic EQPSB 10.2 — Aeronautical fixed telecommunication network (AFTN)			
BASIC EQPSB 10.2.1	Describe the principles of AFTN.	2	
Subtopic EQPSB 10.3 — Online data interchange			
BASIC EQPSB 10.3.1	Describe the benefits of automatic exchange of ATS data in coordination and transfer processes.	2	Accuracy, speed and safety, non-verbal communication
BASIC EQPSB 10.3.2	Describe the limitations of automatic exchange of ATS data in coordination.	2	Non-recognition of a system's failure
Subtopic EQPSB 10.4 — Systems used for the automatic dissemination of information			
BASIC EQPSB 10.4.1	State the working principles of broadcasting systems.	1	*Optional content: ATIS, VOLMET*

TOPIC EQPSB 10 — AUTOMATION IN ATS			
BASIC EQPSB 10.4.2	Explain the use of ATIS and VOLMET in ATS.	2	Regulation (EU) No 923/2012, ICAO Annex 3

TOPIC EQPSB 11 — WORKING POSITIONS			
Subtopic EQPSB 11.1 — Working position equipment			
BASIC EQPSB 11.1.1	Recognise equipment in a working position.	1	*Optional content: FPB, radio, telephone and other communications equipment, relevant maps and charts, strip printer, teleprinter, clock, information monitors, situation displays*
Subtopic EQPSB 11.2 — Aerodrome control			
BASIC EQPSB 11.2.1	Recognise equipment to be found specifically in a TWR.	1	*Optional content: wind indicator, aerodrome traffic monitor, SMR, crash alarm, signalling lamp, lighting control panel, runway-in-use indicator, binoculars, signalling/flare gun, IRVR and altimeter-setting indicators, local information systems*
Subtopic EQPSB 11.3 — Approach control			
BASIC EQPSB 11.3.1	Recognise equipment to be found specifically in an APP.	1	*Optional content: sequencing system, PAR, RVR indicators*
Subtopic EQPSB 11.4 — Area control			
BASIC EQPSB 11.4.1	Recognise equipment to be found specifically in an ACC.	1	

SUBJECT 9: PROFESSIONAL ENVIRONMENT

~~The subject objective is:~~

~~Learners shall recognise the need for close cooperation with other parties concerning ATM operations and aspects of environmental protection.~~

TOPIC PENB 1 — FAMILIARISATION			
Subtopic PENB 1.1 — ATS and aerodrome facilities			
BASIC PENB 1.1.1	Recognise civil and military ATS facilities.	1	*Optional content: TWR, APP, ACC, AIS, RCC, Air Defence Unit*
BASIC PENB 1.1.2	Recognise airport facilities and local operators.	1	*Optional content: firefighting and emergency services, airline operations*

TOPIC PENB 2 — AIRSPACE USERS			
Subtopic PENB 2.1 — Civil aviation			
BASIC PENB 2.1.1	Describe airspace usage by civil aircraft.	2	*Optional content: commercial flying, recreational flying, RPAS, gliders, balloons, calibration flights, aerial photography, skydiving*
Subtopic PENB 2.2 — Military aviation			
BASIC PENB 2.2.1	Describe airspace usage by ~~the~~ military aircraft.	2	Airspace reservations, training, interception, in-flight refuelling, RPAS *Optional content: low-level flying, test flights, special military operations*
Subtopic PENB 2.3 — Pilot ~~E~~expectations and requirements ~~of pilots~~			
BASIC PENB 2.3.1	Recognise pilots' ~~the~~ expectations and requirements ~~of pilots~~.	1	
BASIC PENB 2.3.2	State the use of Standard Operating Procedures (SOPs) by aircraft operators.	1	

TOPIC PENB 3 — CUSTOMER RELATIONS			
Subtopic PENB 3.1 — ~~Customer relations~~ ATS as a service provider			
BASIC PENB 3.1.1	State the role of ATS ~~ATC~~ as a service provider.	1	*Optional content: Skybrary — Air Traffic Service*
BASIC PENB 3.1.2	Recognise the means by which ATS providers are ~~ATC is~~ funded.	1	

TOPIC PENB 4 — ENVIRONMENTAL PROTECTION			
Subtopic PENB 4.1 — Environmental protection			
BASIC PENB 4.1.1	Describe the impact aviation has on the environment.	2	Noise, air quality, climate change, third-party risks

TOPIC PENB 4 — ENVIRONMENTAL PROTECTION			
BASIC PENB 4.1.2	Explain the role of ATS ~~ATC~~ in the concept of sustainable development.	2	*Optional content: ICAO Annex 16*
BASIC PENB 4.1.3	State how the impact of aviation on the environment can be mitigated by ANSPs. ~~State how to measure, monitor and mitigate the impact aviation has on the environment.~~	1	*Optional content: EU ETS, SES initiative, EUROCONTROL role, continuous descent operations (CDOs), continuous climb operations (CCO), collaborative environmental management (CEM), noise-abatement procedures*

AMC1 ATCO.D.010(a)(2)(i) Composition of initial training

AERODROME CONTROL ~~INSTRUMENT~~ RATING ~~FOR TOWER ADI~~ (~~TWR~~ADC) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

(a) The general principles that apply to this AMC are contained in AMC1 ATCO.D.010(a).

(b) The ATCO rating training Aerodrome Control ~~Instrument~~ Rating ~~for Tower ADI~~ (~~TWR~~ ADC) should contain the following ~~subject objectives and~~ training objectives that are associated with the subjects, topics and subtopics contained in Appendix ~~4~~3 Aerodrome Control ~~Instrument~~ Rating ~~for Tower ADI~~ (~~TWR~~ADC) to Annex I to Commission Regulation (EU) 2015/340 ~~— Aerodrome Control Instrument Rating for Tower ADI (TWR)~~.

(c) Subjects, topics and subtopics from Appendix ~~4~~3 to Annex I to Commission Regulation (EU) 2015/340 are repeated in this AMC for the convenience of the reader and do not form part of it.

SUBJECT 1: INTRODUCTION TO THE COURSE

~~The subject objective is:~~
~~Learners shall know and understand the training programme that they will follow and learn how to obtain the appropriate information.~~

TOPIC INTR 1 — COURSE MANAGEMENT				
Subtopic INTR 1.1 — Course introduction				
ADC~~I (TWR)~~ INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
Subtopic INTR 1.2 — Course administration				
ADC~~I (TWR)~~ INTR 1.2.1	State how the course is administered.	1		ALL
Subtopic INTR 1.3 — Study material and training documentation				
ADC~~I (TWR)~~ INTR 1.3.1	Use appropriate documents and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ADC~~I (TWR)~~ INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
Subtopic INTR 2.1 — Course content and organisation				
ADC~~I (TWR)~~ INTR 2.1.1	State the different training methods used during the course.	1	Theoretical training, practical training, self-study, types of training events	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
ADC~~I~~ ~~(TWR)~~ INTR 2.1.2	State the subjects covered by the course and their purpose.	1		ALL
ADC~~I~~ ~~(TWR)~~ INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ADC~~I~~ ~~(TWR)~~ INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
Subtopic INTR 2.2 — Training ethos				
ADC~~I~~ ~~(TWR)~~ INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner–instructor feedback, instructor–instructor feedback	ALL
Subtopic INTR 2.3 — Assessment process				
ADC~~I~~ ~~(TWR)~~ INTR 2.3.1	Describe the assessment process.	2		ALL

SUBJECT 2: AVIATION LAW

~~The subject objective is:~~

~~Learners shall know, understand and apply the Rules of the Air and the Regulations regarding reporting and airspace, and appreciate the Licensing and Competence principles.~~

TOPIC LAW 1 — ATCO LICENSING/CERTIFICATE OF COMPETENCE				
Subtopic LAW 1.1 — Privileges and conditions				
ADC~~I~~ ~~(TWR)~~ LAW 1.1.1	Appreciate the conditions which shall be met to issue an Aerodrome Control ~~Instrument~~ rating ~~with Tower Control endorsement~~.	3	Regulation (EU) 2015/340[15] ~~on ATCO Licensing~~ *Optional content: national documents*	ADC~~I~~
ADC~~I~~ ~~(TWR)~~ LAW 1.1.2	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ADC~~I~~ ~~(TWR)~~ LAW 1.1.3	Explain the conditions for the suspension/revocation of an ATCO licence.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~	ALL

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.1 — Reports				
~~ADI (TWR) LAW 2.1.1~~	~~List the standard forms for reports.~~	~~1~~	~~Air traffic incident report~~ ~~*Optional content: routine air reports, breach of regulations, watchbook/logbook, records*~~	ALL
ADC~~I~~ ~~(TWR)~~ LAW 2.1.~~2~~1	Describe the functions of, and processes for, reporting.	2	Reporting culture, forms for mandatory and voluntary occurrence reporting ~~air traffic incident report~~, Regulation (EU) No 376/2014[16], Regulation (EU) 2015/1018[17] *Optional content: breach of regulations, watchbook/logbook, records, voluntary reporting*	ALL

[15] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1).

[16] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

[17] Commission Implementing Regulation (EU) 2015/1018 of 29 June 2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council (OJ L 163, 30.6.2015, p. 1).

TOPIC LAW 2 — RULES AND REGULATIONS				
ADC~~/~~ ~~(TWR)~~ LAW 2.1.~~3~~2	Use forms for reporting.	3	Regulation (EU) No 376/2014, forms for mandatory and voluntary occurrence reporting ~~air traffic incident reporting form(s)~~ *Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*	ALL
Subtopic LAW 2.2 — Airspace				
ADC~~/~~ ~~(TWR)~~ LAW 2.2.1	Appreciate airspace classes and structure and their relevance to operations using the Aerodrome Control ~~Instrument~~ rating ~~with Tower Control endorsement~~.	3		ADC~~/~~
ADC~~/~~ ~~(TWR)~~ LAW 2.2.2	Provide planning, coordination and control actions appropriate to the classification and structure of airspace.	4	*Optional content: Regulation (EU) No 923/2012[18], international requirements, civil requirements, military requirements, areas of responsibility, sectorisation, national requirements*	ALL
ADC~~/~~ ~~(TWR)~~ LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL
TOPIC LAW 3 — ~~ATC~~ ATS SAFETY MANAGEMENT				
Subtopic LAW 3.1 — Feedback process				
ADC~~/~~ ~~(TWR)~~ LAW 3.1.1	State the importance of controller contribution to the feedback process.	1	*Optional content: voluntary reporting*	ALL
ADC~~/~~ ~~(TWR)~~ LAW 3.1.2	Describe how reported occurrences are analysed.	2	*Optional content: Regulation (EU) No 376/2014, local procedures*	ALL
ADC~~/~~ ~~(TWR)~~ LAW 3.1.3	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards' web pages*	ALL
ADC~~/~~ ~~(TWR)~~ LAW 3.1.4	Appreciate the just culture ~~'Just Culture'~~ concept.	3	Benefits, prerequisites, constraints *Optional content: ~~https://www.s~~Skybrary~~.aero~~*	ALL
Subtopic LAW 3.2 — Safety ~~/~~investigation				

[18] Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

TOPIC LAW 3 — ~~ATC~~ ATS SAFETY MANAGEMENT				
ADC~~I~~ ~~(TWR)~~ LAW 3.2.1	Describe the role and objectives ~~mission~~ of ~~S~~safety ~~I~~investigation in the improvement of safety.	2		ALL
~~ADI (TWR) LAW 3.2.2~~	~~Define working methods of Safety Investigation.~~	~~1~~		~~ALL~~

SUBJECT 3: AIR TRAFFIC MANAGEMENT

~~The subject objective is:~~

~~Learners shall manage air traffic to ensure safe, orderly and expeditious services.~~

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.1 — Aerodrome control service				
ADC~~/~~ ~~(TWR)~~ ATM 1.1.1	Appreciate areas of responsibility.	3	Control zone, traffic circuit, manoeuvring area, movement area, vicinity *Optional content: ATZ*	~~ADV~~ ADC~~/~~
ADC~~/~~ ~~(TWR)~~ ATM 1.1.2	Provide aerodrome control service.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444~~, Regulation (EU) 2017/373[19], operating procedures for the simulated/training environment ~~operation manuals~~	~~ADV~~ ADC~~/~~
Subtopic ATM 1.2 — Flight information service (FIS)				
ADC~~/~~ ~~(TWR)~~ ATM 1.2.1	Describe the information that shall be passed on to aircraft by an aerodrome controller.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	~~ADV~~ ADC~~/~~
ADC~~/~~ ~~(TWR)~~ ATM 1.2.2	Provide FIS.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: national documents*	~~ALL~~
ADC~~/~~ ~~(TWR)~~ ATM 1.2.3	Issue appropriate information.	3	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, essential local traffic, traffic information	~~ADV~~ ADC~~/~~
ADC~~/~~ ~~(TWR)~~ ATM 1.2.4	Appreciate the use of ATIS in the provision of FIS~~flight information service~~.	3	Regulation (EU) No 923/2012	~~ADV~~ ~~ADI~~ ~~ALL~~
Subtopic ATM 1.3 — Alerting service (ALRS)				
ADC~~/~~ ~~(TWR)~~ ATM 1.3.1	Provide ALRS.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: national documents*	ALL
ADC~~/~~ ~~(TWR)~~ ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10~~, ICAO Doc 4444~~ *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ICAO Doc 4444, national documents*	ALL

[19] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.4 — ATS system capacity and air traffic flow management (ATFM)				
ADC~~I~~ ~~(TWR)~~ ATM 1.4.1	Appreciate the impact of the ATS system capacity and air traffic flow management on the controller.	3	*Optional content: EUROCONTROL ATFCM Users Manual, slot management, slot allocation procedures, local implementation of ATFCM principles, etc.*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 1.4.2	Organise traffic to take account of flow management.	4	*Optional content: departure sequence*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 1.4.3	Inform the appropriate local ATFM unit ~~authority~~ of local factors affecting the ATS system capacity and air traffic flow management.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information: reported ground-based incidents, forest fire, smoke, oil pollution*	~~ADV~~ ADC~~I~~

TOPIC ATM 2 — COMMUNICATION				
Subtopic ATM 2.1 — Effective communication				
ADC ATM 2.1.1	List the communication means between controllers.	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ADC ATM 2.1.2	Select the most suitable means of communication given the situation.	5		ALL
ADC~~I~~ ~~(TWR)~~ ATM 2.1.~~1~~3	Use approved phraseology.	3	Regulation (EU) No 923/2012 *Optional content: published national/local language phraseology*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 2.1.~~2~~4	Ensure effective communication.	4	Use of plain language when required, communication within the sector/working position, between the sectors/WPs/ATC units ~~Communication techniques~~, readback/verification of readback	ALL
ADC ATM 2.1.5	Analyse examples of pilot–controller communication for effectiveness.	4	*Optional content: real-life recordings, situation in the simulator*	ALL

TOPIC ATM 3 — ATC CLEARANCES AND ATC INSTRUCTIONS				
Subtopic ATM 3.1 — ATC clearances				
ADC~~I~~ ~~(TWR)~~ ATM 3.1.1	Issue appropriate ATC clearances.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
ADC~~I~~ ~~(TWR)~~ ATM	Integrate appropriate ATC clearances into the control service.	4		ALL

TOPIC ATM 3 — ATC CLEARANCES AND ATC INSTRUCTIONS				
3.1.2				
ADC~~I~~ ~~(TWR)~~ ATM 3.1.3	Ensure that the agreed course of action is carried out.	4		ALL
Subtopic ATM 3.2 — ATC instructions				
ADC~~I~~ ~~(TWR)~~ ATM 3.2.1	Issue appropriate ATC instructions.	3	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 3.2.2	Integrate appropriate ATC instructions into the control service.	4		ALL
ADC~~I~~ ~~(TWR)~~ ATM 3.2.3	Ensure that the agreed course of action is carried out.	4		ALL

TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.1 — Necessity for coordination				
ADC~~I~~ ~~(TWR)~~ ATM 4.1.1	Identify the need for coordination.	3		ALL
Subtopic ATM 4.2 — Tools and methods for coordination				
ADC~~I~~ ~~(TWR)~~ ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
Subtopic ATM 4.3 — Coordination procedures				
ADC~~I~~ ~~(TWR)~~ ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air–ground communications and separation, transfer of control, etc., ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: release point*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 4.3.2	Analyse the effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air–ground communications and separation, release point, transfer of control, etc.*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5		ALL

TOPIC ATM 4 — COORDINATION				
ADC~~I~~ ~~(TWR)~~ ATM 4.3.4	Ensure that the agreed course of action is carried out.	4		ALL
ADC~~I~~ ~~(TWR)~~ ATM 4.3.5	Coordinate when providing FIS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 4.3.6	Coordinate when providing ALRS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL

TOPIC ATM 5 — ALTIMETRY AND LEVEL ALLOCATION				
Subtopic ATM 5.1 — Altimetry				
ADC~~I~~ ~~(TWR)~~ ATM 5.1.1	Allocate levels according to altimetry data.	4	Regulation (EU) No 923/2012	ALL
ADC~~I~~ ~~(TWR)~~ ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
Subtopic ATM 5.2 — Terrain clearance				
ADC~~I~~ ~~(TWR)~~ ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe height and terrain clearance.	4	*Optional content: terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	AD~~I~~C

TOPIC ATM 6 — SEPARATION~~S~~				
Subtopic ATM 6.1 — Separation between departing aircraft				
ADC~~I~~ ~~(TWR)~~ ATM 6.1.1	Provide separation between departing aircraft.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	~~ADV~~ ADC~~I~~
Subtopic ATM 6.2 — Separation of departing aircraft from arriving aircraft				
ADC~~I~~ ~~(TWR)~~ ATM 6.2.1	Provide separation of departing aircraft from arriving aircraft.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	ADC~~I~~
Subtopic ATM 6.3 — Separation of landing aircraft and preceding landing or departing aircraft				
ADC~~I~~ ~~(TWR)~~ ATM 6.3.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	~~ADV~~ ADC~~I~~
Subtopic ATM 6.4 — Time-based wake turbulence longitudinal separation				

TOPIC ATM 6 — SEPARATION~~S~~				
ADC~~I~~ ~~(TWR)~~ ATM 6.4.1	Provide time-based wake turbulence longitudinal separation.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012	ADC~~I~~ ~~ADV~~
Subtopic ATM 6.5 — Reduced separation minima				
ADC~~I~~ ~~(TWR)~~ ATM 6.5.1	Provide reduced separation minima.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	ADC~~I~~ ~~ADV~~
TOPIC ATM 7 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS				
Subtopic ATM 7.1 — Airborne safety nets ~~collision avoidance systems~~				
ADC~~I~~ ~~(TWR)~~ ATM 7.1.1	Recognise the independence of ~~Differentiate between~~ ACAS ~~advisory~~ thresholds and ~~aerodrome~~ ATC separation standards.	~~2~~ 1	ICAO Doc 9863 *Optional content: Skybrary Safety Nets*	~~ADV~~ ~~ADI~~ ALL
ADC~~I~~ ~~(TWR)~~ ATM 7.1.2	Describe the controller responsibility during and following an ACAS RA reported by the pilot.	2	~~ICAO Doc 4444~~ Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, ICAO Doc 9863, Skybrary Safety Nets*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 7.1.3	Respond to pilot notification of actions based on airborne systems' warnings.	3	~~TAWS~~ *Optional content: ACAS, ~~EUROCONTROL ACAS web page~~ Skybrary Safety Nets*	~~ALL~~ ADC
Subtopic ATM 7.2 — Ground-based safety nets				
ADC~~I~~ ~~(TWR)~~ ATM 7.2.1	Respond to available ground-based safety nets' warnings.	3	~~*Optional content: anti-incursion*~~	~~ADV~~ ADC~~I~~
TOPIC ATM 8 — DATA DISPLAY				
Subtopic ATM 8.1 — Data management				
ADC~~I~~ ~~(TWR)~~ ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip-marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
ADC~~I~~ ~~(TWR)~~ ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
ADC~~I~~ ~~(TWR)~~ ATM	Obtain flight plan information.	3	CPL, ~~FPL,~~ supplementary information *Optional content: FPL, ~~RPL,~~ AFIL, etc.*	ALL

TOPIC ATM 8 — DATA DISPLAY				
8.1.4				
ADC~~I~~ ~~(TWR)~~ ATM 8.1.5	Use flight plan information.	3		ALL

TOPIC ATM 9 — OPERATIONAL ENVIRONMENT (SIMULATED)				
Subtopic ATM 9.1 — Integrity of the operational environment				
ADC~~I~~ ~~(TWR)~~ ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: local/simulator operation manuals, briefing, notices, ~~local orders,~~ current flight plan data/information displays, pilot reports, coordination, verification of information*	ALL
ADC~~I~~ ~~(TWR)~~ ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: frequency, VOLMET, ATIS, SIGMET, systems' set-up, integrity of displays*	~~ADV~~ ADC~~I~~
Subtopic ATM 9.2 — Verification of the currency of operational procedures				
ADC~~I~~ ~~(TWR)~~ ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, letters of agreement (LoAs), NOTAMs, AICs*	ALL
Subtopic ATM 9.3 — Handover–takeover				
ADC~~I~~ ~~(TWR)~~ ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
ADC~~I~~ ~~(TWR)~~ ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
ADC ATM 9.3.3	List possible actions to provide a safe position handover–takeover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ADC ATM 9.3.4	Explain the consequences of a missed position handover–takeover process.	2		ALL

TOPIC ATM 10 — PROVISION OF ~~AN~~ AERODROME CONTROL SERVICE				
Subtopic ATM 10.1 — Responsibility for the provision				
ADC~~I~~ ~~(TWR)~~ ATM 10.1.1	Explain the responsibility for the provision of ~~an~~ aerodrome control service.	2	~~ICAO Doc 4444 ICAO Annex 11~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444*	~~ADV~~ ADC~~I~~

TOPIC ATM 10 — PROVISION OF ~~AN~~ AERODROME CONTROL SERVICE				
ADC~~I (TWR)~~ ATM 10.1.2	Describe the division of responsibility among air traffic control units.	2	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444*	*ALL*
ADC~~I (TWR)~~ ATM 10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ADC~~I (TWR)~~ ATM 10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	Regulation (EU) No 923/2012	~~ADV ADI~~ *ALL*
ADC~~I (TWR)~~ ATM 10.1.5	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*
~~Subtopic ATM 10.2 — Functions of aerodrome control tower~~				
~~ADI (TWR) ATM 10.2.1~~	~~Manage the general functions of aerodrome control.~~	~~4~~	~~ICAO Doc 4444~~	~~ADV ADI~~
~~ADI (TWR) ATM 10.2.2~~	~~Manage the suspension of VFR operations.~~	~~4~~	~~ICAO Doc 4444~~	~~ADV ADI~~
Subtopic ATM 10.~~3~~2 — Traffic management process				
ADC~~I (TWR)~~ ATM 10.~~3~~2.1	Ensure that situational awareness is maintained.	4	Information gathering, observation, traffic projection	~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.~~3~~2.2	Detect conflicts in time for appropriate resolution.	4		*ALL*
ADC~~I (TWR)~~ ATM 10.~~3~~2.3	Identify potential solutions to achieve a safe and effective flow of aerodrome traffic.	3		~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.~~3~~2.4	Evaluate possible outcomes of different planning and control actions.	5		~~ADV ADI~~ *ALL*
ADC~~I (TWR)~~ ATM 10.~~3~~2.5	Select an appropriate plan in time to achieve safe and effective flow of aerodrome traffic.	5		~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.~~3~~2.6	Ensure ~~an~~ the adequate prioritisation~~y~~ of actions.	4		*ALL*

TOPIC ATM 10 — PROVISION OF ~~AN~~ AERODROME CONTROL SERVICE				
ADC~~I~~ ~~(TWR)~~ ATM 10.~~3~~2.7	Execute the selected plan in a timely manner.	3		~~ADV~~ ~~ADI~~ *ALL*
ADC~~I~~ ~~(TWR)~~ ATM 10.~~3~~2.8	Ensure that a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow-up	*ALL*
Subtopic ATM 10.~~4~~3— Aeronautical ground lights				
ADC~~I~~ ~~(TWR)~~ ATM 10.~~4~~3.1	Select appropriate aeronautical ground lights.	5	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~	~~ADV~~ ADC~~I~~
Subtopic ATM 10.~~5~~4 — Information to aircraft by the aerodrome control tower				
ADC~~I~~ ~~(TWR)~~ ATM 10.~~5~~4.1	Provide information related to the operation of aircraft.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 255/2010	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 10.~~5~~4.2	Provide information on aerodrome conditions.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373	~~ADV~~ ADC~~I~~
Subtopic ATM 10.~~8~~5 — Runway in use				
ADC~~I~~ ~~(TWR)~~ ATM 10.~~8~~5.1	Select the runway in use.	5	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 10.~~8~~5.2	Coordinate the runway in use.	4	*Optional content: approach control, area control, runway selection, change of runway*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 10.~~8~~5.3	Manage traffic in the event of runway-in-use change.	4	*Optional content: ~~https://www.s~~Skybrary~~.aero~~*	~~ADV~~ ADC~~I~~
Subtopic ATM 10.6 — Control of aerodrome traffic				
ADC~~I~~ ~~(TWR)~~ ATM 10.6.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 10.6.2	Manage traffic on the manoeuvring area.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373 Regulation (EU) No 923/2012~~, aircraft, vehicles~~ *Optional content: runway inspection*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ATM 10.6.3	Manage traffic in accordance with a change to operational procedures.	4	*Optional content: taxiway closure*	~~ADV~~ ADC~~I~~

TOPIC ATM 10 — PROVISION OF ~~AN~~ AERODROME CONTROL SERVICE				
ADC~~I (TWR)~~ ATM 10.6.4	Balance the workload against personal capacity.	5	*Optional content: replanning, prioritising solutions, denying requests, delaying traffic*	~~ADV~~ ADC~~I~~
Subtopic ATM 10.7 — Control of airborne traffic ~~in the traffic circuit~~				
ADC~~I (TWR)~~ ATM 10.7.1	Manage traffic in the traffic circuit.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373 Regulation (EU) No 923/2012~~,~~ ~~meteorological phenomena, geographical knowledge, environmental factors~~	~~ADV~~ ADC~~I~~
~~ADI (TWR) ATM 10.7.2~~	~~Manage arriving and departing traffic.~~	~~4~~	~~ICAO Doc 4444, Regulation (EU) No 923/2012, allocation of the order of priority, meteorological phenomena, wake turbulence, environmental factors~~	~~ADV ADI~~
ADC~~I (TWR)~~ ATM 10.7.~~3~~2	Integrate the change in the serviceability of radio aids in the management of aerodrome traffic.	4	*Optional content: limitations, availability and status of ground-based and satellite-based systems ~~UDF, VDF, ILS, NDB, VOR, DME~~*	~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.7.~~4~~3	Integrate surface conditions into the control of aerodrome traffic.	4	*Optional content: damp, wet, water patches, flooding, snow, slush, ice, braking performance ~~action~~*	~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.7.~~5~~4	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	*Optional content: clouds, precipitation, visibility, wind, meteorological hazards*	~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.7.~~6~~5	Integrate the information provided by situation displays.	4	~~Use, advantages, disadvantages~~	~~ADV~~ ADC~~I~~
ADC~~I (TWR)~~ ATM 10.7.~~7~~6	Issue ~~initiate~~ missed approach or go-around instruction.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: obstructed runway*	~~ADV~~ ADC~~I~~
Subtopic ATM 10.8 — Departing traffic				
ADC ATM 10.8.1	Manage departing aircraft.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, Regulation (EU) 2017/373, use of situation displays, allocation of the order of priority, meteorological phenomena, environmental factors, wake turbulence, appropriate departure clearances, SIDs	ADC
ADC ATM 10.8.2	Integrate departure sequence into the control of aerodrome traffic.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, Regulation (EU) 2017/373	ADC
ADC ATM 10.8.3	Provide appropriate information to departing traffic.	4	Regulation (EU) 2017/373, Regulation (EU) No 255/2010, use of situation displays, wake turbulence *Optional content: ICAO Doc 4444*	ADC

TOPIC ATM 10 — PROVISION OF ~~AN~~ AERODROME CONTROL SERVICE				
Subtopic ATM 10.9 — Arriving traffic				
ADC ATM 10.9.1	Manage arriving aircraft.	4	Regulation (EU) 2017/373, Regulation (EU) No 923/2012, use of situation displays, allocation of the order of priority, meteorological phenomena, environmental factors, wake turbulence *Optional content: ICAO Doc 4444*	ADC
ADC ATM 10.9.2	Integrate the approach sequence into the control of aerodrome traffic.	4	Regulation (EU) 2017/373 Regulation (EU) No 923/2012	ADC
ADC ATM 10.9.3	Integrate aircraft on visual approach into the aerodrome traffic.	4	Regulation (EU) 2017/373 Regulation (EU) No 923/2012	ADC
ADC ATM 10.9.4	Integrate aircraft on missed approach into the aerodrome traffic.	4		ADC
ADC ATM 10.9.5	Integrate aircraft performing circling approach into the aerodrome traffic.	4	ICAO Doc 8168 Volume II	ADC
ADC ATM 10.9.6	Provide appropriate information to arriving aircraft.	4	Regulation (EU) 2017/373 Regulation (EU) No 923/2012	ADC
Subtopic ATM 10.10 — Special VFR (SVFR) operations				
ADC ATM 10.10.1	Manage the suspension of VFR operations.	4	Regulation (EU) 2017/373	ADC
ADC ATM 10.10.2	Manage SVFR traffic.	4	Regulation (EU) No 923/2012, Regulation (EU) 2017/373	ADC
Subtopic ATM 10.11 — Low-visibility operations				
ADC ATM 10.11.1	Describe the procedures for low-visibility operations.	2	Regulation (EU) 2017/373	ADC
Subtopic ATM 10.12 — Aerodrome control service with advanced system support				
ADC ATM 10.12.1	Appreciate the impact of advanced systems on the provision of aerodrome control service.	3	*Optional content: surface manager (SMAN), departure manager (DMAN), automated conflict/incursion tools, alarms and resolution advisory tools, automated assistance for surface movement planning and routing, enhanced vision technology in low visibility for controllers*	ADC

~~TOPIC ATM 11 — PROVISION OF AERODROME CONTROL — INSTRUMENT~~				
~~**Subtopic ATM 11.1 — Low-visibility operations and special VFR**~~				
~~ADI (TWR) ATM 11.1.1~~	~~Manage SVFR traffic.~~	~~4~~	~~Regulation (EU) No 923/2012, ICAO Doc 4444~~	~~ADV ADI~~

TOPIC ATM 11 — PROVISION OF AERODROME CONTROL — INSTRUMENT				
ADI (TWR) ATM 11.1.2	Describe the procedures for low-visibility operations.	2	ICAO Doc 4444	ADI
Subtopic ATM 11.2 — Departing traffic				
ADI (TWR) ATM 11.2.1	Manage control of departing aircraft.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, use of situation displays, wake turbulence, appropriate departure clearances, SIDs	ADI
ADI (TWR) ATM 11.2.2	Integrate departure sequence into the control of aerodrome traffic.	4	ICAO Doc 4444, Regulation (EU) No 923/2012	ADI
ADI (TWR) ATM 11.2.3	Provide appropriate information to departing traffic.	4	ICAO Doc 4444, Regulation (EU) No 255/2010, use of situation displays, wake turbulence	ADI
Subtopic ATM 11.3 — Arriving traffic				
ADI (TWR) ATM 11.3.1	Manage control of arriving aircraft.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, wake turbulence	ADI
ADI (TWR)ATM 11.3.2	Integrate the approach sequence into the control of aerodrome traffic.	4	ICAO Doc 4444, Regulation (EU) No 923/2012	ADI
ADI (TWR) ATM 11.3.3	Integrate aircraft on visual approach into the aerodrome traffic.	4	ICAO Doc 4444, Regulation (EU) No 923/2012	ADI
ADI (TWR) ATM 11.3.4	Integrate aircraft on missed approach into the aerodrome traffic.	4	Use of air traffic monitors	ADI
ADI (TWR) ATM 11.3.5	Integrate aircraft performing circling approach into the aerodrome traffic.	4	ICAO Doc 8168 Volume II	ADI
ADI (TWR) ATM 11.3.6	Provide appropriate information to arriving aircraft.	4	ICAO Doc 4444, Regulation (EU) No 923/2012	ADI
Subtopic ATM 11.4 — Aerodrome control service with advanced system support				
ADI (TWR) ATM 11.4.1	Appreciate the impact of advanced systems on the provision of aerodrome control service.	3	*Optional content: surface manager (SMAN), departure manager (DMAN), automated conflicts/incursions tools, alarms and resolution advisory tools, automated assistance for surface movement planning and routing, enhanced vision technology in low visibility for controllers*	ADI

SUBJECT 4: METEOROLOGY

~~The subject objective is:~~
~~Learners shall acquire, decode and make proper use of meteorological information relevant to the provision of ATS.~~

TOPIC MET 1 — METEOROLOGICAL PHENOMENA				
Subtopic MET 1.1 — Meteorological phenomena				
ADC~~I~~ ~~(TWR)~~ MET 1.1.1	Appreciate the impact of different cloud types.	3	~~Cumulus,~~ cCumulonimbus *Optional content: stratus, nimbostratus, etc.*	~~ADV~~ ADC~~I~~
ADC MET 1.1.2	Recognise different cloud types.	1		ADC
ADC~~I~~ ~~(TWR)~~ MET 1.1.~~2~~3	Appreciate the impact of precipitation.	3	Precipitation and microphysics *Optional content: rain, snow, sleet, hail*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ MET 1.1.~~3~~4	Appreciate the impact of atmospheric obscurity.	3	*Optional content: advection fog, radiation fog, mixing, evaporation, mist, drizzle*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ MET 1.1.~~4~~5	Appreciate the effect and impact of wind.	3	Gusting, veering, backing *Optional content: land breezes, sea breezes, Föhn*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ MET 1.1.~~5~~6	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Wind shear, turbulence, thunderstorms, icing, microbursts	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ MET 1.1.~~6~~7	Appreciate the effect of a frontal system on aerodrome operations.	3		~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ MET 1.1.~~7~~8	Integrate data about meteorological phenomena into the provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena*	*ALL*
TOPIC MET 2 — SOURCES OF METEOROLOGICAL DATA				
Subtopic MET 2.1 — Meteorological instruments				
ADC~~I~~ ~~(TWR)~~ MET 2.1.1	Extract information from meteorological instruments.	3	*Optional content: anemometer, RVR indicator, cloud base indicator, ceilometer, barometer*	~~ADV~~ ADC~~I~~
Subtopic MET 2.2 — Other sources of meteorological data				

TOPIC MET 2 — SOURCES OF METEOROLOGICAL DATA				
ADC~~/(TWR)~~ MET 2.2.1	Decode information from meteorological data displays.	3		*ALL*
ADC~~/(TWR)~~ MET 2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3		~~ADV~~ ADC~~/~~
ADC~~/(TWR)~~ MET 2.2.3	Relay meteorological information.	3	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: flight information centre, adjacent ATS unit, ADS-C reports*	*ALL*

SUBJECT 5: NAVIGATION

~~The subject objective is:~~
~~Learners shall analyse all navigational aspects in order to organise the traffic.~~

TOPIC NAV 1 — MAPS AND AERONAUTICAL CHARTS				
Subtopic NAV 1.1 — Maps and charts				
ADC~~I~~ ~~(TWR)~~ NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Instrument approach charts, SID & STAR charts, aerodrome charts *Optional content: visual approach charts, military maps and charts*	ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ NAV 1.1.2	Use relevant maps and charts.	3		~~ADI~~ *ALL*

TOPIC NAV 2 — INSTRUMENT NAVIGATION				
Subtopic NAV 2.1 — Navigational systems				
ADC~~I~~ ~~(TWR)~~ NAV 2.1.1	Describe how the operational status of navigational systems may change.	2	*Optional content: VDF, NDB, VOR, DME, ILS, ABAS, SBAS, GBAS, RNP*	ADC~~I~~
ADC~~I~~ ~~(TWR)~~ NAV 2.1.~~3~~2	Appreciate the effect of a change on the operational status of navigational systems.	3	*Optional content: precision, limitations, status, degraded procedures*	*ALL*
ADC~~I~~ ~~(TWR)~~ NAV 2.1.~~2~~3	Decode operational status displays of navigational systems.	3	*Optional content: VDF, NDB, VOR, DME, ILS and GBAS*	ADC~~I~~
~~ADI (TWR) NAV 2.1.4~~	~~Manage traffic in case of change in the operational status of navigational systems.~~	~~4~~	~~*Optional content: limitations, availability and status of ground-based and satellite-based systems*~~	~~ADI~~
Subtopic NAV 2.2 — Stabilised approach				
ADC~~I~~ ~~(TWR)~~ NAV 2.2.1	Describe the concept of stabilised approach.	2	*Optional content: ~~https://www.s~~Skybrary~~.aero~~*	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ NAV 2.2.2	Appreciate the effect of late change of runway-in-use for landing aircraft.	3	Cockpit workload *Optional content: impact on vertical profile (CDO), FMS management, crew procedure briefing, missed approach, loss of situational awareness, etc.*	~~ADV~~ ADC~~I~~
Subtopic NAV 2.3 — Instrument departures and arrivals				
ADC~~I~~ ~~(TWR)~~ NAV 2.3.1	Describe relevant SIDs.	2		~~ADI APP APS~~ ADC~~I~~

TOPIC NAV 2 — INSTRUMENT NAVIGATION				
ADC~~I~~ ~~(TWR)~~ NAV 2.3.2	Describe the types and phases of ~~an~~ instrument approach procedures.	2	Regulation (EU) 2017/373, ICAO Annex 6	ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ NAV 2.3.3	Describe the relevant minima applicable for a precision/non-precision and visual approach.	2	*Optional content: Type A/B operations, CAT I/II/III criteria, LNAV, LNAV/VNAV, LPV, RNP AR APCH minima*	ADC~~I~~ APP APS
Subtopic NAV 2.4 — Satellite-based systems				
ADC~~I~~ ~~(TWR)~~ NAV 2.4.1	State the different applications of satellite-based systems relevant for aerodrome operations.	1	*Optional content: LNAV, LNAV/VNAV, LPV, RNP minima, precision approach*	AD~~I~~C
Subtopic NAV 2.5 — PBN applications				
ADC~~I~~ ~~(TWR)~~ NAV 2.5.1	State future PBN developments.	1	A-RNP, RNP (AR) DEP *Optional content: RNP 3D, VNAV, 4D, TBO*	~~ADI~~ ~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ *ALL*

SUBJECT 6: AIRCRAFT

~~The subject objective is:~~

~~Learners shall assess and integrate aircraft performance in the provision of ATS.~~

TOPIC ACFT 1 — AIRCRAFT INSTRUMENTS				
Subtopic ACFT 1.1 — Aircraft instruments				
ADC~~I~~ ~~(TWR)~~ ACFT 1.1.1	Integrate information from aircraft instruments provided by the pilot into the provision of ATS.	4		ALL
ADC~~I~~ ~~(TWR)~~ ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios*	ALL
ADC~~I~~ ~~(TWR)~~ ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability	ADC~~I~~ APS ACS

TOPIC ACFT 2 — AIRCRAFT CATEGORIES				
Subtopic ACFT 2.1 — Wake turbulence				
ADC~~I~~ ~~(TWR)~~ ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to succeeding aircraft.	2		ALL
ADC~~I~~ ~~(TWR)~~ ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence to succeeding aircraft.	3		ALL
Subtopic ACFT 2.2 — Application of the ICAO approach categories				
ADC~~I~~ ~~(TWR)~~ ACFT 2.2.1	Describe the use of the ICAO approach categories.	2	ICAO Doc 8168	ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ ACFT 2.2.2	Appreciate the effect of the ICAO approach categories on the traffic organisation ~~of traffic~~.	3		ADC~~I~~ APP APS

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.1 — Take-off factors				
ADC~~I~~ ~~(TWR)~~ ACFT 3.1.1	Integrate the influence of factors affecting aircraft on take-off.	4	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	~~ADV~~ ADC~~I~~
Subtopic ACFT 3.2 — Climb factors				
ADC~~I~~ ~~(TWR)~~ ACFT	Appreciate the influence of factors affecting aircraft during climb.	3	*Optional content: speed, mass, air density, wind and temperature*	~~ADV~~ ADC~~I~~

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
3.2.1				
Subtopic ACFT 3.3 — Final approach and landing factors				
ADC~~I~~ ~~(TWR)~~ ACFT 3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, meteorological conditions, runway conditions, runway slope, aerodrome elevation*	~~ADV~~ ADC~~I~~
Subtopic ACFT 3.4 — Economic factors				
ADC~~I~~ ~~(TWR)~~ ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: starting-up, taxiing, routing, departure sequence*	~~ADV~~ ADC~~I~~
Subtopic ACFT 3.5 — Environmental factors				
ADC~~I~~ ~~(TWR)~~ ACFT 3.5.1	Appreciate the performance restrictions due to environmental constraints.	3	*Optional content: noise-abatement procedures, minimum flight altitudes, bird strike hazard*	~~ADV~~ ADC~~I~~

TOPIC ACFT 4 — AIRCRAFT DATA				
Subtopic ACFT 4.1 — Recognition of aircraft types				
ADC~~I~~ ~~(TWR)~~ ACFT 4.1.1	Characterise a representative sample of aircraft which will be encountered in the operational/working environment.	2	Recognition, ICAO type designators, wake turbulence categories *Optional content: ICAO approach categories*	ADC~~I~~
Subtopic ACFT 4.2 — Performance data				
ADC~~I~~ ~~(TWR)~~ ACFT 4.2.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/ working environment into the provision of control service.	4	Performance data under a representative variety of circumstances	~~ADV~~ ~~ADI~~ *ALL*

SUBJECT 7: HUMAN FACTORS

~~The subject objective is:~~

~~Learners shall recognise the necessity to constantly extend their knowledge and analyse factors which affect personal and team performance.~~

TOPIC HUM 1 — INFORMATION PROCESSING ~~PSYCHOLOGICAL FACTORS~~				
Subtopic HUM 1.1 — Cognition~~ve~~ and factors influencing it				
ADC~~I (TWR)~~ HUM 1.1.1	Describe the human information-processing model.	2	Attention, perception, memory, situational awareness, decision-making, response	ALL
ADC~~I (TWR)~~ HUM 1.1.2	Describe the factors which influence human information-processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
~~ADI (TWR) HUM 1.1.3~~	~~Monitor the effect of human information-processing factors on decision-making.~~	~~3~~	~~*Optional content: workload, stress, interpersonal relations, distraction, confidence*~~	~~ALL~~
Subtopic HUM 1.2 — Situational awareness				
ADC HUM 1.2.1	Appreciate the effect of human information-processing factors on situational awareness.	3	*Optional content: workload, knowledge, interpersonal relations, distraction, confidence, experience, fatigue, stress*	ALL
Subtopic HUM 1.3 — Decision-making				
ADC HUM 1.3.1	Appreciate the effect of human information-processing factors on decision-making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
Subtopic HUM 2.1 — Fatigue				
~~ADI (TWR) HUM 2.1.1~~	~~State factors that cause fatigue.~~	~~1~~	~~Shift work *Optional content: night shifts and rosters, Regulation (EU) 2017/373[20], ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	~~ALL~~
ADC~~I (TWR)~~ HUM 2.1.~~2~~1	Describe the onset of fatigue.	2	Regulation (EU) 2017/373 *Optional content: lack of concentration, listlessness, irritability, frustration, Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management ~~ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers~~*	ALL

~~[20] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).~~

TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
ADC~~I (TWR)~~ HUM 2.1.~~3~~2	Recognise the onset of fatigue in self and in others.	1	*Optional content: ~~ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers~~ Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL
~~ADI (TWR) HUM 2.1.4~~	~~Recognise the onset of fatigue in others.~~	~~1~~		~~ALL~~
ADC~~I (TWR)~~ HUM 2.1.~~5~~3	Describe the appropriate action when recognising fatigue.	2	*Optional content: Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL
~~Subtopic HUM 2.2 — Fitness~~				
~~ADI (TWR) HUM 2.2.1~~	~~Recognise signs of lack of personal fitness.~~	~~1~~		~~ALL~~
~~ADI (TWR) HUM 2.2.2~~	~~Describe actions when aware of a lack of personal fitness.~~	~~2~~		~~ALL~~
Subtopic HUM 2.2 — Stress				
ADC HUM 2.2.1	Recognise the effects of stress on human performance.	1	Stress and its symptoms in self and in others *Optional content: Regulation (EU) 2017/373*	ALL
ADC HUM 2.2.2	Describe the appropriate action when recognising stress.	2		ALL
ADC HUM 2.2.3	Act to reduce stress.	3		ALL
ADC HUM 2.2.4	Respond to stressful situations by offering, asking for or accepting assistance.	3		ALL
ADC HUM 2.2.5	Recognise the effects of stressful events.	1	Self and others, abnormal situations	ALL
TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
Subtopic HUM 3.1 — Threat and error management framework				
ADC HUM 3.1.1	Explain the importance of threat and error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*	ALL
ADC HUM 3.1.2	Explain the threat and error management framework.	2	Threats, errors, undesired states, countermeasures *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
ADC HUM 3.1.3	Differentiate between the different types of threats in ATC.	2	Internal, external, airborne, environmental *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADC HUM 3.1.4	Differentiate between the different types of errors in ATC.	2	Equipment, procedural, communication *Optional content: Increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
ADC HUM 3.1.5	Differentiate between the different types of undesired states.	2	On the ground, airborne *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADC HUM 3.1.6	Analyse examples of threat and error management in ATC.	4	Case studies *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
Subtopic HUM 3.2 — Application of threat and error management				
ADC HUM 3.2.1	Manage threats.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADC HUM 3.2.2	Manage errors.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADC HUM 3.2.3	Manage undesired states.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~**Subtopic HUM 3.1 — Team resource management (TRM)**~~				
~~ADI (TWR) HUM 3.1.1~~	~~State the relevance of TRM.~~	~~1~~	~~*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*~~	~~ALL~~
~~ADI (TWR) HUM 3.1.2~~	~~State the content of the TRM concept.~~	~~1~~	~~*Optional content: teamwork, human error, team roles, stress, decision-making, communication, situational awareness*~~	~~ALL~~
~~**Subtopic HUM 3.2 — Teamwork and team roles**~~				
~~ADI (TWR) HUM 3.2.1~~	~~Identify reasons for conflict.~~	~~3~~		~~ALL~~
~~ADI (TWR) HUM 3.2.2~~	~~Describe actions to prevent human conflicts.~~	~~2~~	~~*Optional content: TRM team roles*~~	~~ALL~~

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~ADI (TWR) HUM 3.2.3~~	~~Describe strategies to cope with human conflicts.~~	~~2~~	~~*Optional content: in your team, in the simulator*~~	~~ALL~~
~~**Subtopic HUM 3.3 — Responsible behaviour**~~				
~~ADI (TWR) HUM 3.3.1~~	~~Consider the factors which influence responsible behaviour.~~	~~2~~	~~*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*~~	~~ALL~~
~~ADI (TWR) HUM 3.3.2~~	~~Apply responsible judgement.~~	~~3~~	~~Case study and discussion about a dilemma situation~~	~~ALL~~
TOPIC HUM 4 — TEAMWORK ~~STRESS~~				
Subtopic HUM 4.1 — Benefits of teamwork ~~Stress~~				
~~ADI (TWR) HUM 4.1.1~~	~~Recognise the effects of stress on performance.~~	~~1~~	~~Stress and its symptoms in self and in others~~ ~~*Optional content: Regulation (EU) 2017/373*~~	~~ALL~~
ADC HUM 4.1.1	State the benefits of teamwork.	1	Increased safety, efficiency and capacity	ALL
ADC HUM 4.1.2	List the controller's human performance elements affected by teamwork.	1	Situational awareness, communication, decision-making, threat and error management, workload management	ALL
Subtopic HUM 4.2 — Conflict ~~Stress~~ management				
~~ADI (TWR) HUM 4.2.1~~	~~Act to reduce stress.~~	~~3~~	~~The effect of personality in coping with stress, the benefits of active stress management~~	~~ALL~~
~~ADI (TWR) HUM 4.2.2~~	~~Respond to stressful situations by offering, asking or accepting assistance.~~	~~3~~	~~*Optional content: the benefits of offering, accepting and asking for help in stressful situations*~~	~~ALL~~
~~ADI (TWR) HUM 4.2.3~~	~~Recognise the effect of shocking and stressful events.~~	~~1~~	~~Self and others, abnormal situations, Critical Incident Stress Management (CISM)~~	~~ALL~~
~~ADI (TWR) HUM 4.2.4~~	~~Consider the benefits of Critical Incident Stress Management (CISM).~~	~~2~~		~~ALL~~
~~ADI (TWR) HUM 4.2.5~~	~~Explain procedures to be used following an incident/accident.~~	~~2~~	~~*Optional content: CISM, counselling, human element*~~	~~ALL~~
ADC HUM 4.2.1	Identify the reasons for conflict.	3		ALL
ADC HUM 4.2.2	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL

TOPIC HUM 4 — TEAMWORK ~~STRESS~~				
ADC HUM 4.2.3	Describe actions to prevent human conflicts.	2		ALL

TOPIC HUM 5 — SYSTEMS				
Subtopic HUM 5.1 — Concept of systems in ATM/ANS				
ADC HUM 5.1.1	Explain the concept of systems.	2	People; procedures; equipment; ATM in system terms: simple, complicated, and complex systems; system thinking	ALL
ADC HUM 5.1.2	Describe how changes in one part of a system may impact the other parts.	2		ALL
ADC HUM 5.1.3	Describe the role of the human in the system.	2		ALL

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~**Subtopic HUM 5.1 — Human error**~~				
~~ADI (TWR) HUM 5.1.1~~	~~Explain the relationship between error and safety.~~	~~2~~	~~Number and combination of errors, proactive versus reactive approach to discovery of error~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ADI (TWR) HUM 5.1.2~~	~~Differentiate between the types of error.~~	~~2~~	~~Slips, lapses, mistakes~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ADI (TWR) HUM 5.1.3~~	~~Describe error-prone conditions.~~	~~2~~	~~*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*~~	~~ALL~~
~~ADI (TWR) HUM 5.1.4~~	~~Collect examples of different error types, their causes and consequences for ATC.~~	~~3~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ADI (TWR) HUM 5.1.5~~	~~Explain how to detect errors to compensate for them.~~	~~2~~	~~STCA, MSAW, individual and collective strategy~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ADI (TWR) HUM 5.1.6~~	~~Execute corrective actions.~~	~~3~~	~~Error compensation~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ADI (TWR) HUM 5.1.7~~	~~Explain the importance of error management.~~	~~2~~	~~*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*~~	~~ALL~~

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~ADI (TWR) HUM 5.1.8~~	~~Describe the impact on an ATCO's performance following an occurrence/incident.~~	~~2~~	~~*Optional content: reporting, SMS, investigation, CISM*~~	~~ALL~~
~~**Subtopic HUM 5.2 — Violation of rules**~~				
~~ADI (TWR) HUM 5.2.1~~	~~Explain the causes and dangers of violation of rules becoming accepted as a practice.~~	~~2~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
Subtopic HUM 6.1 — Effective communication				
ADC HUM 6.1.1	Explain effective communication in ATC operations.	2	ICAO Doc 9868	ALL
~~ADC~~ ~~(TWR) HUM 6.1.1~~	~~Use communication effectively in ATC.~~	~~3~~		~~ALL~~
ADC HUM 6.1.2	Explain key strategies used to enable open communication.	2	*Optional content: active listening, active speaking, assertiveness, honesty, relevance, facts, neutrality*	ALL
~~ADC~~ ~~(TWR) HUM 6.1.2~~	~~Analyse examples of pilot–controller communication for effectiveness.~~	~~4~~		~~ALL~~
ADC HUM 6.1.3	Describe the parameters affecting the controller's competence to communicate effectively.	2	Workload, mutual knowledge, controller versus pilot mental picture, distractions, sound, human conflicts *Optional content: communication between and within the team(s), in the simulator, with the pilots, instructors, coordination partners*	ALL
Subtopic HUM 6.2 — Effective feedback				
ADC HUM 6.2.1	Define feedback.	1		ALL
ADC HUM 6.2.2	Explain the purpose of receiving and giving feedback, and its effect on performance.	2		ALL
ADC HUM 6.2.3	Consider the impact of communication styles on feedback and on conflict resolution.	2		ALL
ADC HUM 6.2.4	Integrate feedback into performance.	4		ALL
~~**Subtopic HUM 6.2 — Collaborative work within the same area of responsibility**~~				
~~ADI (TWR) HUM 6.2.1~~	~~List communication means between controllers in charge of the same area of responsibility (sector or tower).~~	~~1~~	~~*Optional content: electronic, written, verbal and non-verbal communication*~~	~~ALL~~

TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
~~ADI (TWR) HUM 6.2.2~~	~~Explain consequences of the use of communication means on effectiveness.~~	~~2~~	~~*Optional content: strip legibility and encoding, label designation, feedback*~~	~~ALL~~
~~ADI (TWR) HUM 6.2.3~~	~~List possible actions to provide a safe position handover.~~	~~1~~	~~*Optional content: rigour, preparation, overlap time*~~	~~ALL~~
~~ADI (TWR) HUM 6.2.4~~	~~Explain consequences of a missed position handover process.~~	~~2~~		~~ALL~~
~~**Subtopic HUM 6.3 — Collaborative work between different areas of responsibility**~~				
~~ADI (TWR) HUM 6.3.1~~	~~List factors and means for an effective coordination between sectors and/or tower positions.~~	~~1~~	~~*Optional content: other sectors' constraints, electronic coordination tools*~~	~~ALL~~
~~**Subtopic HUM 6.4 — Controller–pilot cooperation**~~				
~~ADI (TWR) HUM 6.4.1~~	~~Describe parameters affecting controller–pilot cooperation.~~	~~2~~	~~*Optional content: workload, mutual knowledge, controller versus pilot mental picture*~~	~~ALL~~

SUBJECT 8: EQUIPMENT AND SYSTEMS

~~The subject objective is:~~

~~Learners shall integrate knowledge and understanding of the basic working principles of equipment and systems, and comply with the equipment and system degradation procedures in the provision of ATS.~~

TOPIC EQPS 1 — VOICE COMMUNICATIONS				
Subtopic EQPS 1.1 — Radio communications				
ADC~~I~~ ~~(TWR)~~ EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ADC~~I~~ ~~(TWR)~~ EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
Subtopic EQPS 1.2 — Other voice communications				
ADC~~I~~ ~~(TWR)~~ EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL

TOPIC EQPS 2 — AUTOMATION IN ATS				
Subtopic EQPS 2.1 — Aeronautical fixed telecommunication network (AFTN)				
ADC~~I~~ ~~(TWR)~~ EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAMs, SNOWTAMs, BIRDTAMs, etc.*	ALL
Subtopic EQPS 2.2 — Automatic data interchange				
ADC~~I~~ ~~(TWR)~~ EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	~~ADV~~ ADC~~I~~ APS ACS
ADC~~I~~ ~~(TWR)~~ EQPS 2.2.2	Explain operational application of CPDLC for departure clearance (DCL) delivery and D-ATIS.	2	ICAO Doc 9694	~~ADV~~ ADC~~I~~

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
Subtopic EQPS 3.1 — Operation and monitoring of equipment				
ADC~~I~~ ~~(TWR)~~ EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ADC~~I~~ ~~(TWR)~~ EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems, UDF/VDF*	ALL

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
ADC~~I~~ ~~(TWR)~~ EQPS 3.1.3	Operate the available equipment in abnormal and emergency situations.	3		ALL
Subtopic EQPS 3.2 — Situation displays and information systems				
ADC~~I~~ ~~(TWR)~~ EQPS 3.2.1	Use situation displays.	3		ALL
ADC~~I~~ ~~(TWR)~~ EQPS 3.2.2	Check the availability of information.	3		ALL
ADC~~I~~ ~~(TWR)~~ EQPS 3.2.3	Obtain information from equipment.	3	*Optional content: information from wind direction indicator*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ EQPS 3.2.4	Take account of anti-incursion equipment.	2		ADC~~I~~
ADC~~I~~ ~~(TWR)~~ EQPS 3.2.5	Explain the use of ASMGCS.	2		ADC~~I~~
Subtopic EQPS 3.3 — Flight data systems				
ADC~~I~~ ~~(TWR)~~ EQPS 3.3.1	Use the flight data information at the controller working position.	3		ALL

TOPIC EQPS 4 — FUTURE EQUIPMENT				
Subtopic EQPS 4.1 — New developments				
ADC~~I~~ ~~(TWR)~~ EQPS 4.1.1	Recognise future developments.	1	New advanced systems *Optional content: European ATM Master Plan, European Plan for Aviation Safety*	ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
Subtopic EQPS 5.1 — Reaction to limitations				
ADC~~I~~ ~~(TWR)~~ EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
ADC~~I~~ ~~(TWR)~~ EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
Subtopic EQPS 5.2 — Communication equipment degradation				
ADC~~I~~ ~~(TWR)~~ EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground–air, ground–ground and landline communications*	~~ADV~~ ~~ADI~~
ADC~~I~~ ~~(TWR)~~ EQPS 5.2.2	Apply contingency procedures in the event of communication equipment degradation.	4	*Optional content: procedures for total or partial degradation of ground–air, ground–ground and landline communications; alternative methods of transferring data*	~~ADV~~ ~~ADI~~ ALL
Subtopic EQPS 5.3 — Navigational equipment degradation				
ADC~~I~~ ~~(TWR)~~ EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: ~~VOR,~~ navigational aids, 'European GNSS Contingency/Reversion Handbook for PBN Operations'*	ALL
ADC~~I~~ ~~(TWR)~~ EQPS 5.3.2	Apply contingency procedures in the event of a navigational equipment degradation.	3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	~~ADI~~ ~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL

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SUBJECT 9: PROFESSIONAL ENVIRONMENT

~~The subject objective is:~~

~~Learners shall identify the need for close cooperation with other parties concerning ATM operations and appreciate aspects of environmental protection.~~

TOPIC PEN 1 — FAMILIARISATION				
Subtopic PEN 1.1 — Study visit to an aerodrome				
ADC~~I~~ ~~(TWR)~~ PEN 1.1.1	Appreciate the functions and provision of operational aerodrome control services.	3	Study visit to a TWR	~~ADV~~ ADC~~I~~
TOPIC PEN 2 — AIRSPACE USERS				
Subtopic PEN 2.1 — Contributors to civil ATS operations				
ADC~~I~~ ~~(TWR)~~ PEN 2.1.1	Characterise civil ATS activities at an aerodrome.	2	Study visit to a TWR *Optional content: familiarisation visits to APP, ACC, AIS, RCC*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ PEN 2.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to engineering services, firefighting and emergency services, airline operations offices*	ALL
Subtopic PEN 2.2 — Contributors to military ATS operations				
ADC~~I~~ ~~(TWR)~~ PEN 2.2.1	Characterise military ATS activities.	2	*Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, ~~A~~air ~~D~~defence ~~U~~units*	ALL
TOPIC PEN 3 — CUSTOMER RELATIONS				
Subtopic PEN 3.1 — Provision of services and user requirements				
ADC~~I~~ ~~(TWR)~~ PEN 3.1.1	Appreciate ~~identify~~ the role of an air navigation ~~ATC as a~~ service provider.	3	Regulation (EU) 2018/1139[21]	ALL
ADC~~I~~ ~~(TWR)~~ PEN 3.1.2	Appreciate ATS users' requirements.	3		ALL
TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
Subtopic PEN 4.1 — Environmental protection				

[21] Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91.

TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
ADC~~I~~ ~~(TWR)~~ PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Doc 10013 ~~Circular 303~~ — Operational opportunities to reduce ~~Minimize~~ fuel burn ~~Use~~ and ~~Reduce~~ emissions*	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ PEN 4.1.2	Explain the use of the Collaborative Environmental Management (CEM) process at aerodromes.	2	*Optional content: European ATM Master Plan, EUROCONTROL CEM Specification*	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ PEN 4.1.3	Appreciate the mitigation techniques used at aerodromes to minimise aviation's impact on the environment.	3	*Optional content: noise-abatement procedures, noise preferential routes, flight efficiency*	~~ADV~~ ADC~~I~~ APP

SUBJECT 10: ABNORMAL AND EMERGENCY SITUATIONS

~~The subject objective is:~~

~~Learners shall develop a professional attitude to manage traffic in abnormal and emergency situations.~~

TOPIC ABES 1 — ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 1.1 — Overview of ABES				
ADC~~I~~ ~~(TWR)~~ ABES 1.1.1	List common abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure, unreliable instruments, runway incursion, GNSS failure*	ALL
ADC~~I~~ ~~(TWR)~~ ABES 1.1.2	Identify potential or actual abnormal and emergency situations.	3		ALL
ADC~~I~~ ~~(TWR)~~ ABES 1.1.3	Take into account the procedures for given abnormal and emergency situations.	2	Bird strike, aborted take-off *Optional content: ICAO Doc 4444*	~~ADV~~ ADC~~I~~
ADC~~I~~ ~~(TWR)~~ ABES 1.1.4	Take into account that procedures do not exist for all abnormal and emergency situations.	2	*Optional content: real-life examples*	ALL
ADC~~I~~ ~~(TWR)~~ ABES 1.1.5	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.1 — Communication effectiveness				
ADC~~I~~ ~~(TWR)~~ ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, radio silence instruction	ALL
ADC ABES 2.1.2	Apply change of radiotelephony call sign.	3	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444*	ALL
Subtopic ABES 2.2 — Avoidance of mental overload				
ADC~~I~~ ~~(TWR)~~ ABES 2.2.1	Describe actions to keep the situation under control.	2	*Optional content: sector-splitting, holding, flow management, task delegation*	ALL
ADC~~I~~ ~~(TWR)~~ ABES 2.2.2	Organise priority of actions.	4		ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
ADC~~I~~ ~~(TWR)~~ ABES 2.2.3	Ensure the effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.*	ALL
ADC~~I~~ ~~(TWR)~~ ABES 2.2.4	Consider asking for help.	2		ALL
Subtopic ABES 2.3 — Air–ground cooperation				
ADC~~I~~ ~~(TWR)~~ ABES 2.3.1	Collect appropriate information relevant to the situation.	3		ALL
ADC~~I~~ ~~(TWR)~~ ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL

TOPIC ABES 3 — PROCEDURES FOR ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 3.1 — Application of procedures for ABES				
ADC~~I~~ ~~(TWR)~~ ABES 3.1.1	Apply the procedures for given abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure*	ALL
Subtopic ABES 3.2 — Radio failure				
ADC~~I~~ ~~(TWR)~~ ABES 3.2.1	Describe the procedures to be followed by a pilot when experiencing ~~that pilot experiences~~ complete or partial radio failure.	2	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, military procedures, simulator operation procedures*	ALL
ADC~~I~~ ~~(TWR)~~ ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	Regulation (EU) No 923/2012 *Optional content: prolonged loss of communication*	ALL
Subtopic ABES 3.3 — Unlawful interference and aircraft bomb threat				
ADC~~I~~ ~~(TWR)~~ ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	Regulation (EU) No 923/2012 *Optional content: simulator operation procedures*	ALL
Subtopic ABES 3.4 — Strayed or unidentified aircraft				
ADC~~I~~ ~~(TWR)~~ ABES 3.4.1	Apply the procedures for ~~in the case of~~ strayed aircraft.	3	Regulation (EU) No 923/2012 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ADC~~I~~ ~~(TWR)~~ ABES 3.4.2	Apply the procedures for ~~in the case of~~ unidentified aircraft.	3	Regulation (EU) No 923/2012	ALL

TOPIC ABES 3 — PROCEDURES FOR ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
ADC~~I (TWR)~~ ABES 3.4.3	Provide navigational assistance to aircraft.	4	*Optional content: diverted aircraft, aircraft lost or unsure of position, information derived locally or from radar service or from other pilots, nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other relevant navigational assistance, ICAO Doc 4444, etc.*	~~ADV~~ ADC~~I~~
Subtopic ABES 3.5 — Runway incursion				
ADC~~I (TWR)~~ ABES 3.5.1	Apply ATC procedures associated with runway incursion.	3	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	~~ADV~~ ADC~~I~~
ABES 3.6 — Interception of civil aircraft				
ADC ABES 3.6.1	Explain the procedures in the event of interception of civil aircraft.	2	Regulation (EU) No 923/2012	*~~ALL~~*

SUBJECT 11: AERODROMES

~~The subject objective is:~~

~~Learners shall recognise and understand the design and layout of aerodromes.~~

TOPIC AGA 1 — AERODROME DATA, LAYOUT AND COORDINATION				
Subtopic AGA 1.1 — Definitions				
ADC~~I~~ ~~(TWR)~~ AGA 1.1.1	Define aerodrome data.	1	Regulation (EU) No 139/2014[22] *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hotspot~~hot spot~~*	~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 1.2 — Coordination				
ADC~~I~~ ~~(TWR)~~ AGA 1.2.1	Identify the information that has to be exchanged between ~~Air Traffic Services (~~ATS~~)~~ and the aerodrome authority.	3	Aerodrome conditions, fire/rescue category, condition of ground equipment and NAVAIDs, AIRAC, Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
TOPIC AGA 2 — MOVEMENT AREA				
Subtopic AGA 2.1 — Movement area				
ADC~~I~~ ~~(TWR)~~ AGA 2.1.1	Describe the movement area.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.1.3	Identify the information on conditions of the movement area that has to be passed on to aircraft.	3	Essential information on aerodrome conditions	~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 2.2 — Manoeuvring area				
ADC~~I~~ ~~(TWR)~~ AGA 2.2.1	Describe the manoeuvring area.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.2.2	Describe the taxiway.	2		~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.2.3	Describe the daylight marking on taxiways.	2		~~ADV~~ ADC~~I~~ APP APS

[22] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1).

TOPIC AGA 2 — MOVEMENT AREA				
ADC~~I~~ ~~(TWR)~~ AGA 2.2.4	Describe taxiway lighting.	2		~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 2.3 — Runways				
ADC~~I~~ ~~(TWR)~~ AGA 2.3.1	Describe the runway.	2	Runway, runway surface, runway strip, runway shoulder, runway-end safety areas, clearways, stopways	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.2	Describe the instrument runway.	2	Regulation (EU) No 139/2014	ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.3	Describe the non-instrument runway.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.4	Explain runway declared distances.	2	TORA, TODA, ASDA, LDA	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barettes*	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.8	Explain the functions of visual landing aids.	2	*Optional content : AVASI, VASI, PAPI*	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.10	Characterise the effect of water/ice on runways.	2		~~ADV~~ ADC~~I~~ APP APS
ADC~~I~~ ~~(TWR)~~ AGA 2.3.11	Explain braking ~~action~~ performance and methods of reporting it.	2	~~Braking action coefficient~~	~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 2 — MOVEMENT AREA				
ADC~~I (TWR)~~ AGA 2.3.12	Explain the effect of runway visual range on aerodrome operations.	2		~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 3 — OBSTACLES				
Subtopic AGA 3.1 — Obstacle-free airspace around aerodromes				
ADC~~I (TWR)~~ AGA 3.1.1	Explain the necessity for establishing and maintaining airspace around aerodromes obstacle free~~an obstacle-free airspace around aerodromes~~.	2		~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 4 — MISCELLANEOUS EQUIPMENT				
Subtopic AGA 4.1 — Location				
ADC~~I (TWR)~~ AGA 4.1.1	Explain the location of miscellaneous ~~different~~ aerodrome ground equipment.	2	*Optional content: LOC, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI*	~~ADV~~ ADC~~I~~ APP APS

AMC1 ATCO.D.010(a)(2)(ii~~i~~) Composition of initial training

APPROACH CONTROL PROCEDURAL RATING (APP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

(a) The general principles that apply to this AMC are contained in AMC1 ATCO.D.010(a).

(b) The ATCO rating training Approach Control Procedural Rating (APP) should contain the following ~~subject objectives and~~ training objectives that are associated with the subjects, topics and subtopics contained in Appendix ~~5~~4 Approach Control Procedural Rating (APP) to Annex I to Commission Regulation (EU) 2015/340~~ — Approach Control Procedural Rating (APP)~~.

(c) Subjects, topics and subtopics from Appendix ~~5~~4 to Annex I to Commission Regulation (EU) 2015/340 are repeated in this AMC for the convenience of the reader and do not form part of it.

SUBJECT 1: INTRODUCTION TO THE COURSE

~~The subject objective is:~~
~~Learners shall know and understand the training programme that they will follow and learn how to obtain the appropriate information.~~

TOPIC INTR 1 — COURSE MANAGEMENT				
Subtopic INTR 1.1 — Course introduction				
APP INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
Subtopic INTR 1.2 — Course administration				
APP INTR 1.2.1	State how the course is administered.	1		ALL
Subtopic INTR 1.3 — Study material and training documentation				
APP INTR 1.3.1	Use appropriate documents and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
APP INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
Subtopic INTR 2.1 — Course content and organisation				
APP INTR 2.1.1	State the different training methods used during the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
APP INTR 2.1.2	State the subjects covered by the course and their purpose.	1		ALL
APP INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
APP INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
Subtopic INTR 2.2 — Training ethos				
APP INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner–instructor feedback, instructor–instructor feedback	ALL
Subtopic INTR 2.3 — Assessment process				
APP INTR 2.3.1	Describe the assessment process.	2		ALL

SUBJECT 2: AVIATION LAW

~~The subject objective is:~~

~~Learners shall know, understand and apply the Rules of the Air and the Regulations regarding reporting and airspace, and appreciate the Licensing and Competence principles.~~

TOPIC LAW 1 — ATCO LICENSING/CERTIFICATE OF COMPETENCE				
Subtopic LAW 1.1 — Privileges and conditions				
APP LAW 1.1.1	Appreciate the conditions which shall be met to issue an Approach Control Procedural rating.	3	Regulation (EU) 2015/340[23] ~~on ATCO Licensing~~ *Optional content: national documents*	APP
APP LAW 1.1.2	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
APP LAW 1.1.3	Explain the conditions for suspension/revocation of an ATCO licence.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~	ALL

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.1 — Reports				
~~APP LAW 2.1.1~~	~~List the standard forms for reports.~~	~~1~~	~~Air traffic incident report~~ ~~*Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*~~	~~ALL~~
APP LAW 2.1.~~2~~1	Describe the functions of, and processes for, reporting.	2	Reporting culture, forms for mandatory and voluntary occurrence reporting ~~air traffic incident report~~, Regulation (EU) No 376/2014[24], Regulation (EU) 2015/1018[25] *Optional content: breach of regulations, watchbook/logbook, records, voluntary reporting*	ALL
APP LAW 2.1.~~3~~2	Use forms for reporting.	3	Regulation (EU) No 376/2014, forms for mandatory and voluntary occurrence reporting ~~air traffic incident reporting form(s)~~ *Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*	ALL

[23] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1).

[24] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

[25] Commission Implementing Regulation (EU) 2015/1018 of 29 June 2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council (OJ L 163, 30.6.2015, p. 1).

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.2 — Airspace				
APP LAW 2.2.1	Appreciate airspace classes and structure and their relevance to operations using the Approach Control Procedural rating.	3		APP
APP LAW 2.2.2	Provide planning, coordination and control actions appropriate to the classification and structure of given airspace.	4	*Optional content: Regulation (EU) No 923/2012[26], international requirements, civil requirements, military requirements, areas of responsibility, sectorisation, national requirements*	ALL
APP LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

TOPIC LAW 3 — ATS ~~ATC~~ SAFETY MANAGEMENT				
Subtopic LAW 3.1 — Feedback process				
APP LAW 3.1.1	State the importance of controller contribution to the feedback process.	1	*Optional content: voluntary reporting*	ALL
APP LAW 3.1.2	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, Regulation (EU) No 376/2014, local procedures*	ALL
APP LAW 3.1.3	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards, web pages*	ALL
APP LAW 3.1.4	Appreciate the just culture ~~'Just Culture'~~ concept.	3	Benefits, prerequisites, constraints *Optional content:* *~~https://www.s~~Skybrary~~.aero~~*	ALL
Subtopic LAW 3.2 — Safety ~~i~~investigation				
APP LAW 3.2.1	Describe the role and objectives ~~mission~~ of ~~S~~safety ~~i~~investigation in the improvement of safety.	2		ALL
~~APP LAW 3.2.2~~	~~Define working methods of Safety Investigation.~~	~~1~~		~~ALL~~

[26] Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

SUBJECT 3: AIR TRAFFIC MANAGEMENT

~~The subject objective is:~~

~~Learners shall manage air traffic to ensure safe, orderly and expeditious services.~~

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.1 — Air traffic control (ATC) service				
APP ATM 1.1.1	Appreciate own area of responsibility.	3		APP ACP APS ACS
APP ATM 1.1.2	Provide approach control service.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444,~~ Regulation (EU) 2017/373[27], operating procedures for the simulated/training environment ~~operation manuals~~	APP APS
Subtopic ATM 1.2 — Flight information service (FIS)				
APP ATM 1.2.1	Provide FIS.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: national documents*	*ALL*
APP ATM 1.2.2	Issue appropriate information concerning the position of conflicting traffic.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373, traffic information, essential traffic information	APP ACP *APS ACS*
APP ATM 1.2.3	Appreciate the use of ATIS in the provision of FIS~~flight information service~~.	3	Regulation (EU) No 923/2012	*ALL*
Subtopic ATM 1.3 — Alerting service (ALRS)				
APP ATM 1.3.1	Provide ALRS.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: national documents*	ALL
APP ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10~~, ICAO Doc 4444~~ *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ICAO Doc 4444, national documents*	ALL
Subtopic ATM 1.4 — ATS system capacity and air traffic flow management (ATFM)				
APP ATM 1.4.1	Appreciate the impact of the ATS system capacity and air traffic flow management on the controller.	3	*Optional content: EUROCONTROL ATFCM Users Manual, FABs, FUA, free route airspace, local implementation of ATFCM principles, etc.*	APP ACP APS ACS

[27] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).

TOPIC ATM 1 — PROVISION OF SERVICES				
APP ATM 1.4.2	Take account of ~~Apply~~ flow management procedures in the provision of ATC.	~~3~~ 2	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ~~ACP~~ APS ~~ACS~~
APP ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
APP ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
APP ATM 1.4.5	Inform the supervisor of local factors affecting the ATS system capacity and air traffic flow management.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
Subtopic ATM 1.5 — Airspace management (ASM)				
APP ATM 1.5.1	Appreciate the impact of ASM on the controller.	3	*Optional content: FABs, EUROCONTROL Specification for the application of FUA, TSAs, CDRs, CBAs, free route airspace*	APP ACP APS ACS
APP ATM 1.5.2	Organise traffic to take account of ASM.	4	*Optional content: CDR, TSA, TRA, CBA, real-time activation, deactivation or reallocation of airspace*	APP ACP

TOPIC ATM 2 — COMMUNICATION				
Subtopic ATM 2.1 — Effective communication				
APP ATM 2.1.1	List the means of communication between controllers.	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
APP ATM 2.1.2	Select the most suitable means of communication given the situation.	5		ALL
APP ATM 2.1.~~1~~3	Use approved phraseology.	3	Regulation (EU) No 923/2012 *Optional content: published national/local language phraseology*	ALL
APP ATM 2.1.~~2~~4	Ensure effective communication.	4	Use of plain language when required, communication within the sector/working position, between the sectors/WPs/ATC units ~~Communication techniques~~, readback/verification of readback	ALL

TOPIC ATM 2 — COMMUNICATION				
APP ATM 2.1.5	Analyse examples of pilot and controller communication for effectiveness.	4	*Optional content: real-life recordings, situation in the simulator*	ALL

TOPIC ATM 3 — ATC CLEARANCES AND ATC INSTRUCTIONS				
Subtopic ATM 3.1 — ATC clearances				
APP ATM 3.1.1	Issue appropriate ATC clearances.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
APP ATM 3.1.2	Integrate appropriate ATC clearances into the control service.	4		ALL
APP ATM 3.1.3	Ensure that the agreed course of action is carried out.	4		ALL
Subtopic ATM 3.2 — ATC instructions				
APP ATM 3.2.1	Issue appropriate ATC instructions.	3	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
APP ATM 3.2.2	Integrate appropriate ATC instructions into the control service.	4		ALL
APP ATM 3.2.3	Ensure that the agreed course of action is carried out.	4		ALL

TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.1 — Necessity for coordination				
APP ATM 4.1.1	Identify the need for coordination.	3		ALL
Subtopic ATM 4.2 — Tools and methods for coordination				
APP ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
Subtopic ATM 4.3 — Coordination procedures				
APP ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air–ground communications and separation, transfer of control, etc., ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: release point*	ALL

TOPIC ATM 4 — COORDINATION				
APP ATM 4.3.2	Analyse the effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air–ground communications and separation, release point, transfer of control, etc.*	ALL
APP ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5		ALL
APP ATM 4.3.4	Ensure that the agreed course of action is carried out.	4		ALL
APP ATM 4.3.5	Coordinate when providing FIS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
APP ATM 4.3.6	Coordinate when providing ALRS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
TOPIC ATM 5 — ALTIMETRY AND LEVEL ALLOCATION				
Subtopic ATM 5.1 — Altimetry				
APP ATM 5.1.1	Allocate levels according to altimetry data.	4	Regulation (EU) No 923/2012	ALL
APP ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
Subtopic ATM 5.2 — Terrain clearance				
APP ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum ~~safe~~ usable levels and terrain clearance.	4	*Optional content: terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APP ACP
TOPIC ATM 6 — SEPARATIONS				
Subtopic ATM 6.1 — Vertical separation				
APP ATM 6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, level allocation, during climb/descent, rate of climb/descent, holding pattern	APP APS
APP ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: level allocation, during climb/descent, rate of climb/descent, degraded aircraft performance, non-RVSM aircraft, reported severe turbulence*	APP ACP APS ACS
APP ATM 6.1.3	Appreciate the application of emergency vertical separation.	3	Regulation (EU) No 923/2012, ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS

TOPIC ATM 6 — SEPARATION~~S~~				
Subtopic ATM 6.2 — Horizontal separation				
APP ATM 6.2.1	Provide longitudinal separation.	4	Regulation (EU) 2017/373, ~~B~~based on time, based on distance (DME and/or GNSS, RNAV)	APP
APP ATM 6.2.2	Provide lateral separation.	4	Regulation (EU) 2017/373, ~~ICAO Doc 4444, ICAO Doc 7030,~~ holding	APP ACP
APP ATM 6.2.3	Provide track separation.	4		ACP APP
APP ATM 6.2.4	Provide geographical separation.	4	Visual, using navigation aids, area navigation	ACP APP
Subtopic ATM 6.3 — Delegation of separation				
APP ATM 6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
APP ATM 6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~	APP APS

TOPIC ATM 7 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS				
Subtopic ATM 7.1 — Airborne safety nets ~~collision avoidance systems~~				
APP ATM 7.1.1	Recognise the independence of ACAS thresholds from ATC separation standards.	1	ICAO Doc 9863 *Optional content: Skybrary Safety Nets*	ALL
~~APP ATM 7.1.1~~	~~Differentiate between ACAS advisory thresholds and separation standards applicable in the approach control environment.~~	~~2~~	~~ICAO Doc 9863~~ ~~*Optional content: EUROCONTROL TCAS web page*~~	~~APP APS~~
APP ATM 7.1.2	Describe the controller responsibility during and following an ACAS RA reported by the pilot.	2	~~ICAO Doc 4444~~ Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, ICAO Doc 9863, Skybrary Safety Nets*	ALL
APP ATM 7.1.3	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS~~, TAWS~~ *Optional content: ~~EUROCONTROL ACAS web page~~ TAWS, Skybrary Safety Nets*	~~ALL~~ APP APS ACP ACS

TOPIC ATM 8 — DATA DISPLAY				
Subtopic ATM 8.1 — Data management				
APP ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip-marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL

TOPIC ATM 8 — DATA DISPLAY				
APP ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
APP ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
APP ATM 8.1.4	Obtain flight plan information.	3	CPL, ~~FPL,~~ supplementary information *Optional content: FPL, ~~RPL,~~ AFIL, etc.*	ALL
APP ATM 8.1.5	Use flight plan information.	3		ALL

TOPIC ATM 9 — OPERATIONAL ENVIRONMENT (SIMULATED)				
Subtopic ATM 9.1 — Integrity of the operational environment				
APP ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: local/simulator operation manuals, briefing, notices, ~~local orders,~~ current flight plan data/information displays, pilot reports, coordination, verification of information*	ALL
APP ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS
Subtopic ATM 9.2 — Verification of the currency of operational procedures				
APP ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, letters of agreement (LoAs), NOTAMs, AICs*	ALL
APP ATM 9.2.2	Manage traffic in accordance with a change to operational procedures.	4		APP ACP APS ACS
Subtopic ATM 9.3 — Handover–takeover				
APP ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
APP ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
APP ATM 9.3.3	List possible actions to provide a safe position handover–takeover.	1	*Optional content: rigour, preparation, overlap time*	ALL
APP ATM 9.3.4	Explain the consequences of a missed position handover–takeover process.	2		ALL

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
Subtopic ATM 10.1 — Responsibility for the provision of control service and the processing of information				
APP ATM 10.1.1	Describe the division of responsibility among air traffic control units.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	*ALL*
APP ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
APP ATM 10.1.3	Describe the responsibility in regard to unmanned free balloons.	2	Regulation (EU) No 923/2012	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ *ALL*
~~APP ATM 10.1.4~~	~~Obtain operational information.~~	~~3~~	~~ICAO Doc 4444, local operation manuals~~	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~
APP ATM 10.1.~~5~~4	Interpret operational information.	5		APP ACP APS ACS
APP ATM 10.1.~~6~~5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
APP ATM 10.1.~~7~~6	Integrate operational information into control decisions.	4		APP ACP APS ACS
APP ATM 10.1.~~8~~7	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*
Subtopic ATM 10.2 — Approach control				
APP ATM 10.2.1	Explain the responsibility for the provision of an approach procedural control service.	2	~~ICAO Doc 4444~~, Regulation (EU) 2017/373 ~~ICAO Annex 11,~~ Regulation (EU) No 923/2012 ~~local operation manuals~~ *Optional content: local/simulator operation manuals*	APP
APP ATM 10.2.2	Provide planning, coordination and control actions appropriate to VFR, SVFR and IFR traffic in VMC and IMC.	4	Regulation (EU) No 923/2012, Regulation (EU) 2017/373,~~ICAO Annex 11,~~ ICAO Doc 4444	APP ~~ACP~~ *APS* ~~ACS~~
Subtopic ATM 10.3 — Traffic management process				
APP ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, traffic projection	APP ACP

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
APP ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		*ALL*
APP ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
APP ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		~~APP ACP APS ACS~~ *ALL*
APP ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
APP ATM 10.3.6	Ensure ~~an~~ the adequate prioritisation~~y~~ of actions.	4		*ALL*
APP ATM 10.3.7	Execute the selected plan in a timely manner.	3		~~APP ACP APS ACS~~ *ALL*
APP ATM 10.3.8	Ensure that a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow-up	*ALL*
Subtopic ATM 10.4 — Handling traffic				
APP ATM 10.4.1	Manage arrivals, departures and overflights.	4	*Optional content: simulator operation procedures*	APP ACP APS ACS
APP ATM 10.4.2	Balance the workload against personal capacity.	5	*Optional content: rerouting, replanning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS
APP ATM 10.4.3	Manage traffic on different types of approaches.	4	Precision, non-precision, visual	APP *APS*
APP ATM 10.4.4	Initiate missed approach.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ~~https://www.s~~Skybrary~~.aero~~*	APP *APS*
APP ATM 10.4.5	Integrate aircraft on missed approach into the traffic situation.	4		APP *APS*

TOPIC ATM 11 — HOLDING				
Subtopic ATM 11.1 — General holding procedures				
APP ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, Regulation (EU) No 923/2012, Regulation (EU) 2017/373, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
APP ATM 11.1.2	Appreciate the factors affecting holding patterns.	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
Subtopic ATM 11.2 — Approaching aircraft				
APP ATM 11.2.1	Issue Expected Approach Times (EATs).	3		APP APS
APP ATM 11.2.2	Organise the traffic landing sequence in a holding pattern.	4	*Optional content: company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management*	APP APS

SUBJECT 4: METEOROLOGY

~~The subject objective is:~~
~~Learners shall acquire, decode and make proper use of meteorological information relevant to the provision of ATS.~~

TOPIC MET 1 — METEOROLOGICAL PHENOMENA				
Subtopic MET 1.1 — Meteorological phenomena				
APP MET 1.1.1	Appreciate the impact of adverse weather on aircraft.	3	Thunderstorms, icing, clear-air turbulence (CAT), turbulence, microburst, wind shear, severe mountain waves, squall lines, volcanic ash	APP APS
APP MET 1.1.2	Integrate data about meteorological phenomena into the provision of ATS.	4	Clearances, instructions, and transmitted information	*ALL*

TOPIC MET 1 — METEOROLOGICAL PHENOMENA				
			Optional content: relevant meteorological phenomena	
APP MET 1.1.3	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS

TOPIC MET 2 — SOURCES OF METEOROLOGICAL DATA				
Subtopic MET 2.1 — Sources of meteorological information				
APP MET 2.1.1	Obtain meteorological information.	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/special AIREP*	APP ACP APS ACS
APP MET 2.1.2	Decode information form meteorological data displays.	3		*ALL*
APP MET 2.1.~~2~~3	Relay meteorological information.	3	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: flight information centre, adjacent ATS unit*	*ALL*

SUBJECT 5: NAVIGATION

~~The subject objective is:~~

~~Learners shall analyse all navigational aspects in order to organise the traffic.~~

TOPIC NAV 1 — MAPS AND AERONAUTICAL CHARTS				
Subtopic NAV 1.1 — Maps and charts				
APP NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Instrument approach charts, SID & STAR charts, aerodrome charts *Optional content: visual approach charts, military maps and charts*	ADC~~I~~ APP APS
APP NAV 1.1.2	Use relevant maps and charts.	3		~~APP~~ ~~*ACP*~~ ~~APS~~ ~~*ACS*~~ *ALL*
TOPIC NAV 2 — INSTRUMENT NAVIGATION				
Subtopic NAV 2.1 — Navigational systems				
APP NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, availability and status of ground-based and satellite-based systems*	APP ACP APS ACS
APP NAV 2.1.2	Appreciate the effect of a change in the operational status of navigational systems.	3	*Optional content: precision, limitations, status, degraded procedures*	*ALL*
Subtopic NAV 2.2 — Stabilised approach				
APP NAV 2.2.1	Describe the concept of stabilised approach.	2	*Optional content: ~~https://www.s~~Skybrary~~.aero~~*	~~ADV~~ ADC~~I~~ APP APS
APP NAV 2.2.2	Appreciate the effect of late change of runway-in-use or type of approach for landing aircraft.	3	Cockpit workload *Optional content: impact on vertical profile (CDO), FMS management, crew procedure briefing, missed approach, loss of situational awareness, etc.*	APP APS
APP NAV 2.2.3	Appreciate controller actions that may contribute to unstabilised approach.	3	Delayed descent	APP
Subtopic NAV 2.3 — Instrument departures and arrivals				
APP NAV 2.3.1	Describe relevant SIDs and STARs.	2		~~ADI~~ APP APS
APP NAV 2.3.2	Describe the types and phases of instrument approach procedures.	2	Regulation (EU) 2017/373, ICAO Annex 6	APP APS
APP NAV 2.3.3	Describe the relevant minima applicable for a precision/non-precision and visual approach.	2	*Optional content: Type A/B operations, CAT I/II/III criteria, LNAV, LNAV/VNAV, LPV, RNP AR APCH minima*	ADC~~I~~ APP APS

TOPIC NAV 2 — INSTRUMENT NAVIGATION				
Subtopic NAV 2.4 — Navigational assistance				
APP NAV 2.4.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	APP *ACP* APS *ACS*
Subtopic NAV 2.5 — Satellite-based systems				
APP NAV 2.5.1	State the different applications of satellite-based systems relevant for approach operations.	1	RNP APCH, RNP AR APCH, SBAS, GBAS *Optional content: LNAV, LNAV/VNAV, LPV, RNP minima, precision approach*	APP APS
Subtopic NAV 2.6 — PBN applications				
APP NAV 2.6.1	State the navigation applications used in approach and terminal environments.	1	Approach-RNP APCH/ RNP AR APCH, Terminal-RNAV-1 RNP 1 with RF, rotorcraft option RNP 0.3 *Optional content: ICAO Doc 9613, Regulation (EU) No 716/2014[28], Regulation (EU) 2018/1048[29]*	APP APS
APP NAV 2.6.2	Explain the principles and designation of navigation specifications in use.	2	Performance, functionality, sensors *Optional content: aircrew and controller requirements, accuracy requirements, integrity and continuity*	APP *ACP* APS *ACS*
APP NAV 2.6.3	Describe the differences in turn performance.	2	*Optional content: fly-by, fly-over, RF, ICAO Doc 4444*	APP APS
APP NAV 2.6.~~3~~4	State future PBN developments.	1	A-RNP, RNP (AR) DEP *Optional content: RNP 3D, VNAV, 4D, TBO*	*ALL* ~~ADI APP APS ACP ACS~~

[28] Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan (OJ L 190, 28.6.2014, p. 19).

[29] Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning performance-based navigation (OJ L 189, 26.7.2018, p. 3).

SUBJECT 6: AIRCRAFT

~~The subject objective is:~~

~~Learners shall assess and integrate aircraft performance in the provision of ATS.~~

TOPIC ACFT 1 — AIRCRAFT INSTRUMENTS				
Subtopic ACFT 1.1 — Aircraft instruments				
APP ACFT 1.1.1	Integrate information from aircraft instruments provided by the pilot into the provision of ATS.	4		ALL
APP ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios*	ALL

TOPIC ACFT 2 — AIRCRAFT CATEGORIES				
Subtopic ACFT 2.1 — Wake turbulence				
APP ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to succeeding aircraft.	2		ALL
APP ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence to succeeding aircraft.	3		ALL
Subtopic ACFT 2.2 — Application of the ICAO approach categories				
APP ACFT 2.2.1	Describe the use of the ICAO approach categories.	2	ICAO Doc 8168	ADC~~I~~ APP APS
APP ACFT 2.2.2	Appreciate the effect of the ICAO approach categories on the traffic organisation ~~of traffic~~.	3		ADC~~I~~ APP APS

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.1 — Climb factors				
APP ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
APP ACFT 3.1.2	Describe the influence of factors affecting departing aircraft.	3	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	APP APS
Subtopic ACFT 3.2 — Cruise factors				
APP ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	*Optional content: level, cruising speed, wind, mass, cabin pressurisation*	APP APS
Subtopic ACFT 3.3 — Descent and initial approach factors				
APP ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, aircraft configuration, cabin pressurisation*	APP APS

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.4 — Final approach and landing factors				
APP ACFT 3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, meteorological conditions, runway conditions, runway slope, aerodrome elevation*	APP APS
Subtopic ACFT 3.5 — Economic factors				
APP ACFT 3.5.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile*	APP APS
APP ACFT 3.5.2	Use continuous climb techniques where applicable.	3		APP ACP
APP ACFT 3.5.3	Use direct routing where applicable.	3		APP *ACP* APS *ACS*
Subtopic ACFT 3.6 — Environmental factors				
APP ACFT 3.6.1	Appreciate the performance restrictions due to environmental considerations.	3	*Optional content: fuel-dumping, noise-abatement procedures, minimum flight levels, bird strike hazard, continuous descent operations*	APP APS

TOPIC ACFT 4 — AIRCRAFT DATA				
Subtopic ACFT 4.1 — Performance data				
APP ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/-working environment into the provision of control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS

SUBJECT 7: HUMAN FACTORS

~~The subject objective is:~~

~~Learners shall recognise the necessity to constantly extend their knowledge and analyse factors which affect personal and team performance.~~

TOPIC HUM 1 — INFORMATION PROCESSING ~~PSYCHOLOGICAL FACTORS~~				
Subtopic HUM 1.1 — Cognition~~ve~~ and factors influencing it				
APP HUM 1.1.1	Describe the human information-processing model.	2	Attention, perception, memory, situational awareness, decision-making, response	ALL
APP HUM 1.1.2	Describe the factors which influence human information-processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
~~APP HUM 1.1.3~~	~~Monitor the effect of human information-processing factors on decision-making.~~	~~3~~	~~*Optional content: workload, stress, interpersonal relations, distraction, confidence*~~	~~ALL~~
Subtopic HUM 1.2 — Situational awareness				
APP HUM 1.2.1	Appreciate the effect of human information-processing factors on situational awareness.	3	*Optional content: workload, knowledge, interpersonal relations, distraction, confidence, experience, fatigue, stress*	ALL
Subtopic HUM 1.3 — Decision-making				
APP HUM 1.3.1	Appreciate the effect of human information-processing factors on decision-making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
Subtopic HUM 2.1 — Fatigue				
~~APP HUM 2.1.1~~	~~State factors that cause fatigue.~~	~~1~~	~~Shift work *Optional content: night shifts and rosters, Regulation (EU) 2017/373[30]; ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	~~ALL~~
APP HUM 2.1.~~2~~1	Describe the onset of fatigue.	2	Regulation (EU) 2017/373 *Optional content: lack of concentration, listlessness, irritability, frustration, Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management ~~ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers~~*	ALL
APP HUM 2.1.~~3~~2	Recognise the onset of fatigue in self and in others.	1	*Optional content: ~~ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers~~ Skybrary Human*	ALL

~~[30] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).~~

TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
			Behaviour: EUROCONTROL Fatigue and sleep management	
~~APP HUM 2.1.4~~	~~Recognise the onset of fatigue in others.~~	~~1~~		~~ALL~~
APP HUM 2.1.~~5~~3	Describe the appropriate action when recognising fatigue.	2	*Optional content: Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL
~~**Subtopic HUM 2.2 — Fitness**~~				
~~APP HUM 2.2.1~~	~~Recognise signs of lack of personal fitness.~~	~~1~~		~~ALL~~
~~APP HUM 2.2.2~~	~~Describe actions when aware of a lack of personal fitness.~~	~~2~~		~~ALL~~
Subtopic HUM 2.2 — Stress				
APP HUM 2.2.1	Recognise the effects of stress on human performance.	1	Stress and its symptoms in self and in others *Optional content: Regulation (EU) 2017/373*	ALL
APP HUM 2.2.2	Describe the appropriate action when recognising stress.	2		ALL
APP HUM 2.2.3	Act to reduce stress.	3		ALL
APP HUM 2.2.4	Respond to stressful situations by offering, asking for or accepting assistance.	3		ALL
APP HUM 2.2.5	Recognise the effect of stressful events.	1	Self and others, abnormal situations	ALL
TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
Subtopic HUM 3.1 — Threat and error management framework				
APP HUM 3.1.1	Explain the importance of threat and error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*	ALL
APP HUM 3.1.2	Explain the threat and error management framework.	2	Threats, errors, undesired states, countermeasures *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 3.1.3	Differentiate between the different types of threats in ATC.	2	Internal, external, airborne, environmental	ALL

TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
			Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control	
APP HUM 3.1.4	Differentiate between the different types of errors in ATC.	2	Equipment, procedural, communication *Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
APP HUM 3.1.5	Differentiate between the different types of undesired states.	2	On the ground, airborne *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 3.1.6	Analyse examples of threat and error management in ATC.	4	Case studies *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
Subtopic HUM 3.2 — Application of threat and error management				
APP HUM 3.2.1	Manage threats.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 3.2.2	Manage errors.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 3.2.3	Manage undesired states.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~**Subtopic HUM 3.1 — Team resource management (TRM)**~~				
~~APP HUM 3.1.1~~	~~State the relevance of TRM.~~	~~1~~	~~*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*~~	~~ALL~~
~~APP HUM 3.1.2~~	~~State the content of the TRM concept.~~	~~1~~	~~*Optional content: teamwork, human error, team roles, stress, decision-making, communication, situational awareness*~~	~~ALL~~
~~**Subtopic HUM 3.2 — Teamwork and team roles**~~				
~~APP HUM 3.2.1~~	~~Identify reasons for conflict.~~	~~3~~		~~ALL~~
~~APP HUM 3.2.2~~	~~Describe actions to prevent human conflicts.~~	~~2~~	~~*Optional content: TRM team roles*~~	~~ALL~~
~~APP HUM 3.2.3~~	~~Describe strategies to cope with human conflicts.~~	~~2~~	~~*Optional content: in your team, in the simulator*~~	~~ALL~~

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~Subtopic HUM 3.3 — Responsible behaviour~~				
~~APP HUM 3.3.1~~	~~Consider the factors which influence responsible behaviour.~~	~~2~~	~~*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*~~	~~ALL~~
~~APP HUM 3.3.2~~	~~Apply responsible judgement.~~	~~3~~	~~Case study and discussion about a dilemma situation~~	~~ALL~~
TOPIC HUM 4 — TEAMWORK ~~STRESS~~				
Subtopic HUM 4.1 — Benefits of teamwork ~~Stress~~				
~~APP HUM 4.1.1~~	~~Recognise the effects of stress on performance.~~	~~1~~	~~Stress and its symptoms in self and in others~~ ~~*Optional content: Regulation (EU) 2017/373*~~	~~ALL~~
APP HUM 4.1.1	State the benefits of teamwork.	1	Increased safety, efficiency and capacity	ALL
APP HUM 4.1.2	List the controller's human performance elements affected by teamwork.	1	Situational awareness, communication, decision-making, threat and error management, workload management	ALL
Subtopic HUM 4.2 — ~~Stress~~ Conflict management				
~~APP HUM 4.2.1~~	~~Act to reduce stress.~~	~~3~~	~~The effect of personality in coping with stress, the benefits of active stress management~~	~~ALL~~
~~APP HUM 4.2.2~~	~~Respond to stressful situations by offering, asking or accepting assistance.~~	~~3~~	~~*Optional content: the benefits of offering, accepting and asking for help in stressful situations*~~	~~ALL~~
~~APP HUM 4.2.3~~	~~Recognise the effect of shocking and stressful events.~~	~~1~~	~~Self and others, abnormal situations, Critical Incident Stress Management (CISM)~~	~~ALL~~
~~APP HUM 4.2.4~~	~~Consider the benefits of Critical Incident Stress Management (CISM).~~	~~2~~		~~ALL~~
~~APP HUM 4.2.5~~	~~Explain procedures to be used following an incident/accident.~~	~~2~~	~~*Optional content: CISM, counselling, human element*~~	~~ALL~~
APP HUM 4.2.1	Identify the reasons for conflict.	3		ALL
APP HUM 4.2.2	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
APP HUM 4.2.3	Describe actions to prevent human conflicts.	2		ALL

TOPIC HUM 5 — SYSTEMS				
Subtopic HUM 5.1 — Concept of systems in ATM/ANS				
APP HUM 5.1.1	Explain the concept of systems.	2	People; procedures; equipment; ATM in system terms: simple, complicated, and complex systems; system thinking	ALL
APP HUM 5.1.2	Describe how changes in one part of a system may impact the other parts.	2		ALL
APP HUM 5.1.3	Describe the role of the human in the system.	2		ALL

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~**Subtopic HUM 5.1 — Human error**~~				
~~APP HUM 5.1.1~~	~~Explain the relationship between error and safety.~~	~~2~~	~~Number and combination of errors, proactive versus reactive approach to discovery of error~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APP HUM 5.1.2~~	~~Differentiate between the types of error.~~	~~2~~	~~Slips, lapses, mistakes~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APP HUM 5.1.3~~	~~Describe error-prone conditions.~~	~~2~~	~~*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*~~	~~ALL~~
~~APP HUM 5.1.4~~	~~Collect examples of different error types, their causes and consequences for ATC.~~	~~3~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APP HUM 5.1.5~~	~~Explain how to detect errors to compensate for them.~~	~~2~~	~~STCA, MSAW, individual and collective strategy~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APP HUM 5.1.6~~	~~Execute corrective actions.~~	~~3~~	~~Error compensation~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APP HUM 5.1.7~~	~~Explain the importance of error management.~~	~~2~~	~~*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*~~	~~ALL~~
~~APP HUM 5.1.8~~	~~Describe the impact on an ATCO's performance following an occurrence/incident.~~	~~2~~	~~*Optional content: reporting, SMS, investigation, CISM*~~	~~ALL~~
~~**Subtopic HUM 5.2 — Violation of rules**~~				

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~APP HUM 5.2.1~~	~~Explain the causes and dangers of violation of rules becoming accepted as a practice.~~	~~2~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
Subtopic HUM 6.1 — Effective ~~C~~communication				
~~APP HUM 6.1.1~~	~~Use communication effectively in ATC.~~	~~3~~		~~ALL~~
APP HUM 6.1.1	Explain effective communication in ATC operations.	2	ICAO Doc 9868	ALL
~~APP HUM 6.1.2~~	~~Analyse examples of pilot- controller communication for effectiveness.~~	~~4~~		~~ALL~~
APP HUM 6.1.2	Explain key strategies used to enable open communication.	2	*Optional content: active listening, active speaking, assertiveness, honesty, relevance, facts, neutrality*	ALL
APP HUM 6.1.3	Describe the parameters affecting the controller's competence to communicate effectively.	2	Workload, mutual knowledge, controller versus pilot mental picture, distractions, sound, human conflicts *Optional content: communication between and within the team(s), in the simulator, with the pilots, instructors, coordination partners*	ALL
Subtopic HUM 6.2 — Effective feedback				
APP HUM 6.2.1	Define feedback.	1		ALL
APP HUM 6.2.2	Explain the purpose of receiving and giving feedback, and its effect on performance.	2		ALL
APP HUM 6.2.3	Consider the impact of communication styles on feedback and on conflict resolution.	2		ALL
APP HUM 6.2.4	Integrate feedback into performance.	4		ALL
~~Subtopic HUM 6.2 — Collaborative work within the same area of responsibility~~				
~~APP HUM 6.2.1~~	~~List communication means between controllers in charge of the same area of responsibility (sector or tower).~~	~~1~~	~~*Optional content: electronic, written, verbal and non-verbal communication*~~	~~ALL~~
~~APP HUM 6.2.2~~	~~Explain consequences of the use of communication means on effectiveness.~~	~~2~~	~~*Optional content: strip legibility and encoding, label designation, feedback*~~	~~ALL~~
~~APP HUM 6.2.3~~	~~List possible actions to provide a safe position handover.~~	~~1~~	~~*Optional content: rigour, preparation, overlap time*~~	~~ALL~~

TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
~~APP HUM 6.2.4~~	~~Explain consequences of a missed position handover process.~~	~~2~~		~~ALL~~
~~Subtopic HUM 6.3 — Collaborative work between different areas of responsibility~~				
~~APP HUM 6.3.1~~	~~List factors and means for an effective coordination between sectors and/or tower positions.~~	~~1~~	~~*Optional content: other sectors' constraints, electronic coordination tools*~~	~~ALL~~
~~Subtopic HUM 6.4 — Controller–pilot cooperation~~				
~~APP HUM 6.4.1~~	~~Describe parameters affecting controller–pilot cooperation.~~	~~2~~	~~*Optional content: workload, mutual knowledge, controller versus pilot mental picture*~~	~~ALL~~

SUBJECT 8: EQUIPMENT AND SYSTEMS

~~The subject objective is:~~

~~Learners shall integrate knowledge and understanding of the basic working principles of equipment and systems, and comply with the equipment and system degradation procedures in the provision of ATS.~~

TOPIC EQPS 1 — VOICE COMMUNICATIONS				
Subtopic EQPS 1.1 — Radio communications				
APP EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
APP EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
APP EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
Subtopic EQPS 1.2 — Other voice communications				
APP EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL

TOPIC EQPS 2 — AUTOMATION IN ATS				
Subtopic EQPS 2.1 — Aeronautical fixed telecommunication network (AFTN)				
APP EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
Subtopic EQPS 2.2 — Automatic data interchange				
APP EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: automated information and coordination, OLDI*	APP ACP

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
Subtopic EQPS 3.1 — Operation and monitoring of equipment				
APP EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
APP EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems, UDF/VDF*	ALL
APP EQPS 3.1.3	Operate the available equipment in abnormal and emergency situations.	3		ALL
Subtopic EQPS 3.2 — Situation displays and information systems				
APP EQPS 3.2.1	Use situation displays.	3		ALL

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
APP EQPS 3.2.2	Check the availability of information.	3		ALL
APP EQPS 3.2.3	Obtain information from equipment.	3		APP ACP APS ACS
Subtopic EQPS 3.3 — Flight data systems				
APP EQPS 3.3.1	Use the flight data information at the controller working position.	3		ALL

TOPIC EQPS 4 — FUTURE EQUIPMENT				
Subtopic EQPS 4.1 — New developments				
APP EQPS 4.1.1	Recognise future developments.	1	New advanced systems *Optional content: European ATM Master Plan, European Plan for Aviation Safety*	ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
Subtopic EQPS 5.1 — Reaction to limitations				
APP EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
APP EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
Subtopic EQPS 5.2 — Communication equipment degradation				
APP EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground–air and landline communications*	APP ACP APS ACS
APP EQPS 5.2.2	Apply contingency procedures in the event of communication equipment degradation.	3	*Optional content: procedures for total or partial degradation of ground–air and landline communications, alternative methods of transferring data*	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL
Subtopic EQPS 5.3 — Navigational equipment degradation				
APP EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: ~~VOR,~~ navigational aids, 'European GNSS Contingency/Reversion Handbook for PBN Operations'*	ALL
APP EQPS 5.3.2	Apply contingency procedures in the event of ~~a~~ navigational equipment degradation.	3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	~~ADI~~ ~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL

SUBJECT 9: PROFESSIONAL ENVIRONMENT

~~The subject objective is:~~

~~Learners shall identify the need for close cooperation with other parties concerning ATM operations and appreciate aspects of environmental protection.~~

TOPIC PEN 1 — FAMILIARISATION				
Subtopic PEN 1.1 — Study visit to an approach control unit				
APP PEN 1.1.1	Appreciate the functions and provision of operational approach control service.	3	Study visit to an approach control unit	APP APS

TOPIC PEN 2 — AIRSPACE USERS				
Subtopic PEN 2.1 — Contributors to civil ATS operations				
APP PEN 2.1.1	Characterise civil ATS activities in the approach control unit.	2	Study visit to an approach control unit *Optional content: familiarisation visits to TWR, ACC, AIS, RCC*	APP APS
APP PEN 2.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to engineering services, firefighting and emergency services, airline operations offices*	ALL
Subtopic PEN 2.2 — Contributors to military ATS operations				
APP PEN 2.2.1	Characterise military ATS activities.	2	*Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, ~~A~~air ~~D~~defence ~~U~~units*	ALL

TOPIC PEN 3 — CUSTOMER RELATIONS				
Subtopic PEN 3.1 — Provision of services and user requirements				
APP PEN 3.1.1	Appreciate ~~Identify~~ the role of an air navigation ~~ATC as a~~ service provider.	3	Regulation (EU) 2018/1139	ALL
APP PEN 3.1.2	Appreciate ATS users' requirements.	3		ALL

TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
Subtopic PEN 4.1 — Environmental protection				
APP PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Doc 10013 ~~Circular 303~~ — Operational opportunities to reduce ~~minimise~~ fuel burn ~~use~~ and ~~reduce~~ emissions*	~~ADV~~ ADC~~I~~ APP APS
APP PEN 4.1.2	Explain the use of the Collaborative Environmental Management (CEM) process at aerodromes.	2	*Optional content: European ATM Master Plan, EUROCONTROL CEM Specification*	~~ADV~~ ADC~~I~~ APP APS
APP PEN 4.1.3	Appreciate the mitigation techniques used at aerodromes to minimise aviation's impact on the environment.	3	*Optional content: noise-abatement procedures, noise preferential routes, flight efficiency*	ADC APP ~~APS~~

[Regulatory source]

SUBJECT 10: ABNORMAL AND EMERGENCY SITUATIONS

~~The subject objective is:~~
~~Learners shall develop a professional attitude to manage traffic in abnormal and emergency situations.~~

TOPIC ABES 1 — ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 1.1 — Overview of ABES				
APP ABES 1.1.1	List common abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure, unreliable instruments, runway incursion, GNSS failure*	ALL
APP ABES 1.1.2	Identify potential or actual abnormal and emergency situations.	3		ALL
APP ABES 1.1.3	Take into account the procedures for given abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
APP ABES 1.1.4	Take into account that procedures do not exist for all abnormal and emergency situations.	2	*Optional content: real-life examples*	ALL
APP ABES 1.1.5	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.1 — Communication effectiveness				
APP ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, radio silence instruction	ALL
APP ABES 2.1.2	Apply change of radiotelephony call sign.	3	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444*	ALL
Subtopic ABES 2.2 — Avoidance of mental overload				
APP ABES 2.2.1	Describe actions to keep the situation under control.	2	*Optional content: sector-splitting, holding, flow management, task delegation*	ALL
APP ABES 2.2.2	Organise priority of actions.	4		ALL
APP ABES 2.2.3	Ensure the effective dissemination of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.*	ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
APP ABES 2.2.4	Consider asking for help.	2		ALL
Subtopic ABES 2.3 — Air–ground cooperation				
APP ABES 2.3.1	Collect appropriate information relevant to the situation.	3		ALL
APP ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
TOPIC ABES 3 — PROCEDURES FOR ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 3.1 — Application of procedures for ABES				
APP ABES 3.1.1	Apply the procedures for given abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure*	ALL
Subtopic ABES 3.2 — Radio failure				
APP ABES 3.2.1	Describe the procedures to be followed by a pilot when experiencing ~~that pilot experiences~~ complete or partial radio failure.	2	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, military procedures, simulator operation procedures*	ALL
APP ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	Regulation (EU) No 923/2012 *Optional content: prolonged loss of communication*	ALL
Subtopic ABES 3.3 — Unlawful interference and aircraft bomb threat				
APP ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	Regulation (EU) No 923/2012 *Optional content: simulator operation procedures*	ALL
Subtopic ABES 3.4 — Strayed or unidentified aircraft				
APP ABES 3.4.1	Apply the procedures for ~~in the case of~~ strayed aircraft.	3	Regulation (EU) No 923/2012 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
APP ABES 3.4.2	Apply the procedures for ~~in the case of~~ unidentified aircraft.	3	Regulation (EU) No 923/2012	ALL
Subtopic ABES 3.5 — Diversion~~s~~				
APP ABES 3.5.1	Provide navigational assistance to aircraft diverting in emergency.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS
Subtopic ABES 3.6 — Interception of civil aircraft				
APP ABES 3.6.1	Explain the procedures for interception of civil aircraft.	2	Regulation (EU) No 923/2012	*ALL*

SUBJECT 11: AERODROMES

~~The subject objective is:~~

~~Learners shall recognise and understand the design and layout of aerodromes.~~

TOPIC AGA 1 — AERODROME DATA, LAYOUT AND COORDINATION				
Subtopic AGA 1.1 — Definitions				
APP AGA 1.1.1	Define aerodrome data.	1	Regulation (EU) No 139/2014[31] *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hotspot~~hot spot~~*	~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 1.2 — Coordination				
APP AGA 1.2.1	Identify the information that has to be exchanged between ~~Air Traffic Services (~~ATS~~)~~ and the aerodrome authority.	3	Aerodrome conditions, fire/rescue category, condition of ground equipment and NAVAIDs, AIRAC, Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 2 — MOVEMENT AREA				
Subtopic AGA 2.1 — Movement area				
APP AGA 2.1.1	Describe the movement area.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.1.3	Identify the information on conditions of the movement area that has to be passed on to aircraft.	3	Essential information on aerodrome conditions	~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 2.2 — Manoeuvring area				
APP AGA 2.2.1	Describe the manoeuvring area.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.2.2	Describe the taxiway.	2		~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.2.3	Describe the daylight marking on taxiways.	2		~~ADV~~ ADC~~I~~ APP APS

[31] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1).

TOPIC AGA 2 — MOVEMENT AREA				
APP AGA 2.2.4	Describe taxiway lighting.	2		~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 2.3 — Runways				
APP AGA 2.3.1	Describe the runway.	2	Runway, runway surface, runway strip, shoulder, runway-end safety areas, clearways, stopways	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.2	Describe the instrument runway.	2	Regulation (EU) No 139/2014	ADC~~I~~ APP APS
APP AGA 2.3.3	Describe the non-instrument runway.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barrettes*	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.8	Explain the functions of visual landing aids.	2	*Optional content : AVASI, VASI, PAPI*	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.10	Characterise the effect of water/ice on runways.	2		~~ADV~~ ADC~~I~~ APP APS
APP AGA 2.3.11	Explain braking ~~action~~ performance and methods of reporting it.	2	~~Braking action coefficient~~	~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 2 — MOVEMENT AREA				
APP AGA 2.3.12	Explain the effect of runway visual range on aerodrome operations.	2		~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 3 — OBSTACLES				
Subtopic AGA 3.1 — Obstacle-free airspace around aerodromes				
APP AGA 3.1.1	Explain the necessity for establishing and maintaining airspace around aerodromes obstacle free~~an obstacle-free airspace around aerodromes~~.	2		~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 4 — MISCELLANEOUS EQUIPMENT				
Subtopic AGA 4.1 — Location				
APP AGA 4.1.1	Explain the location of miscellaneous ~~different~~ aerodrome ground equipment.	2	*Optional content: LOC, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI*	~~ADV~~ ADC~~I~~ APP APS

AMC1 ATCO.D.010(a)(2)(iii~~iv~~) Composition of initial training

AREA CONTROL PROCEDURAL RATING (ACP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

(a) The general principles that apply to this AMC are contained in AMC1 ATCO.D.010(a).

(b) The ATCO ~~R~~rating training Area Control Procedural Rating (ACP) should contain the following ~~subject objectives and~~ training objectives that are associated with the subjects, topics and subtopics contained in Appendix ~~6~~5 Area Control Procedural Rating (ACP) to Annex I to Commission Regulation (EU) 2015/340~~— Area Control Procedural Rating (ACP)~~.

(c) Subjects, topics and subtopics from Appendix ~~6~~5 to Annex I to Commission Regulation (EU) 2015/340 are repeated in this AMC for the convenience of the reader and do not form part of it.

SUBJECT 1: INTRODUCTION TO THE COURSE

~~The subject objective is:~~

~~Learners shall know and understand the training programme that they will follow and learn how to obtain the appropriate information.~~

TOPIC INTR 1 — COURSE MANAGEMENT				
Subtopic INTR 1.1 — Course introduction				
ACP INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
Subtopic INTR 1.2 — Course administration				
ACP INTR 1.2.1	State how the course is administered.	1		ALL
Subtopic INTR 1.3 — Study material and training documentation				
ACP INTR 1.3.1	Use appropriate documents and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ACP INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
Subtopic INTR 2.1 — Course content and organisation				
ACP INTR 2.1.1	State the different training methods used during the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
ACP INTR 2.1.2	State the subjects covered by the course and their purpose.	1		ALL
ACP INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ACP INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
Subtopic INTR 2.2 — Training ethos				
ACP INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner–instructor feedback, instructor–instructor feedback	ALL
Subtopic INTR 2.3 — Assessment process				
ACP INTR 2.3.1	Describe the assessment process.	2		ALL

SUBJECT 2: AVIATION LAW

~~The subject objective is:~~

~~Learners shall know, understand and apply the Rules of the Air and the Regulations regarding reporting and airspace, and appreciate the Licensing and Competence principles.~~

TOPIC LAW 1 — ATCO LICENSING/CERTIFICATE OF COMPETENCE				
Subtopic LAW 1.1 — Privileges and conditions				
ACP LAW 1.1.1	Appreciate the conditions which shall be met to issue an Area Control Procedural rating.	3	Regulation (EU) 2015/340[32] ~~on ATCO Licensing~~ *Optional content: national documents*	ACP
ACP LAW 1.1.2	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ACP LAW 1.1.3	Explain the conditions for the suspension/~~-~~revocation of an ATCO licence.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~	ALL

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.1 — Reports				
~~ACP LAW 2.1.1~~	~~List the standard forms for reports.~~	~~1~~	~~Air traffic incident report~~ ~~*Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*~~	~~ALL~~
ACP LAW 2.1.~~2~~1	Describe the functions of, and processes for, reporting.	2	Reporting culture, forms for mandatory and voluntary occurrence reporting ~~air traffic incident report~~, Regulation (EU) No 376/2014[33], Regulation (EU) 2015/1018[34] *Optional content: breach of regulations, watchbook/logbook, records, voluntary reporting*	ALL
ACP LAW 2.1.~~3~~2	Use forms for reporting.	3	Regulation (EU) No 376/2014, forms for mandatory and voluntary occurrence reporting ~~air traffic incident reporting form(s)~~ *Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*	ALL

[32] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1).

[33] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

[34] Commission Implementing Regulation (EU) 2015/1018 of 29 June 2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council (OJ L 163, 30.6.2015, p. 1).

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.2 — Airspace				
ACP LAW 2.2.1	Appreciate airspace classes and structure and their relevance to operation using the Area Control Procedural rating.	3		ACP
ACP LAW 2.2.2	Provide planning, coordination and control actions appropriate to the classification and structure of given airspace.	4	*Optional content: Regulation (EU) No 923/2012[35], international requirements, civil requirements, military requirements, areas of responsibility, sectorisation, national requirements*	ALL
ACP LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

TOPIC LAW 3 — ~~ATC~~ ATS SAFETY MANAGEMENT				
Subtopic LAW 3.1 — Feedback process				
ACP LAW 3.1.1	State the importance of controller contribution to the feedback process.	1	*Optional content: voluntary reporting*	ALL
ACP LAW 3.1.2	Describe how reported occurrences are analysed.	2	*Optional content: Regulation (EU) No 376/2014, local procedures*	ALL
ACP LAW 3.1.3	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards' web pages*	ALL
ACP LAW 3.1.4	Appreciate the just culture~~'Just Culture'~~ concept.	3	Benefits, prerequisites, constraints *Optional content:* *~~https://www.s~~Skybrary~~.aero~~*	ALL
Subtopic LAW 3.2 — Safety ~~i~~investigation				
ACP LAW 3.2.1	Describe the role and objectives ~~mission~~ of ~~S~~safety ~~i~~investigation in the improvement of safety.	2		ALL
~~ACP LAW 3.2.2~~	~~Define working methods of Safety Investigation.~~	~~1~~		~~ALL~~

[35] Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

SUBJECT 3: AIR TRAFFIC MANAGEMENT

~~The subject objective is:~~

~~Learners shall manage air traffic to ensure safe, orderly and expeditious services.~~

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.1 — Air traffic control (ATC) service				
ACP ATM 1.1.1	Appreciate own area of responsibility.	3		APP ACP APS ACS
ACP ATM 1.1.2	Provide area control service.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444,~~ Regulation (EU) 2017/373[36], operating procedures for the simulated/training environment ~~operation manuals~~	ACP ACS
Subtopic ATM 1.2 — Flight information service (FIS)				
ACP ATM 1.2.1	Provide FIS.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: national documents*	*ALL*
ACP ATM 1.2.2	Issue appropriate information concerning the position of conflicting traffic.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373, traffic information, essential traffic information	APP ACP *APS ACS*
ACP ATM 1.2.3	Appreciate the use of ATIS in the provision of FIS.	3	Regulation (EU) No 923/2012	*ALL*
Subtopic ATM 1.3 — Alerting service (ALRS)				
ACP ATM 1.3.1	Provide ALRS.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: national documents*	ALL
ACP ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10~~, ICAO Doc 4444~~ *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ICAO Doc 4444, national documents*	ALL
Subtopic ATM 1.4 — ATS system capacity and air traffic flow management (ATFM)				
ACP ATM 1.4.1	Appreciate the impact of the ATS system capacity and air traffic flow management on the controller.	3	*Optional content: EUROCONTROL ATFCM Users Manual, FABs, FUA, free route airspace, local implementation of ATFCM principles, etc.*	APP ACP APS ACS

[36] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).

TOPIC ATM 1 — PROVISION OF SERVICES				
ACP ATM 1.4.2	Apply flow management procedures in the provision of ATC.	3	*Optional content: EUROCONTROL ATFCM Users Manual*	~~APP~~ ACP ~~APS~~ ACS
ACP ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
ACP ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
ACP ATM 1.4.5	Inform the supervisor of local factors affecting the ATS system capacity and air traffic flow management.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
Subtopic ATM 1.5 — Airspace management (ASM)				
ACP ATM 1.5.1	Appreciate the impact of ASM on the controller.	3	*Optional content: FABs, EUROCONTROL Specification for the application of FUA, TSAs, CDRs, CBAs, free route airspace*	APP ACP APS ACS
ACP ATM 1.5.2	Organise traffic to take account of ASM.	4	*Optional content: CDR, TSA, TRA, CBA, real-time activation, deactivation or reallocation of airspace*	APP ACP

TOPIC ATM 2 — COMMUNICATION				
Subtopic ATM 2.1 — Effective communication				
ACP ATM 2.1.1	List the means of communication between controllers.	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ACP ATM 2.1.2	Select the most suitable means of communication given the situation.	5		ALL
ACP ATM 2.1.~~1~~3	Use approved phraseology.	3	Regulation (EU) No 923/2012 *Optional content: published national/local language phraseology*	ALL
ACP ATM 2.1.~~2~~4	Ensure effective communication.	4	Use of plain language when required, communication within the sector/working position, between the sectors/WPs/ATC units ~~Communication techniques~~, readback/verification of readback	ALL

TOPIC ATM 2 — COMMUNICATION				
ACP ATM 2.1.5	Analyse examples of pilot and controller communication for effectiveness.	4	*Optional content: real-life recordings, situation in the simulator*	ALL

TOPIC ATM 3 — ATC CLEARANCES AND ATC INSTRUCTIONS				
Subtopic ATM 3.1 — ATC clearances				
ACP ATM 3.1.1	Issue appropriate ATC clearances.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
ACP ATM 3.1.2	Integrate appropriate ATC clearances into the control service.	4		ALL
ACP ATM 3.1.3	Ensure that the agreed course of action is carried out.	4		ALL
Subtopic ATM 3.2 — ATC instructions				
ACP ATM 3.2.1	Issue appropriate ATC instructions.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444, national documents*	ALL
ACP ATM 3.2.2	Integrate appropriate ATC instructions into the control service.	4		ALL
ACP ATM 3.2.3	Ensure that the agreed course of action is carried out.	4		ALL

TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.1 — Necessity for coordination				
ACP ATM 4.1.1	Identify the need for coordination.	3		ALL
Subtopic ATM 4.2 — Tools and methods for coordination				
ACP ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
Subtopic ATM 4.3 — Coordination procedures				
ACP ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air–ground communications and separation, transfer of control, etc., Regulation (EU) 2017/373 ~~ICAO Doc 4444~~ *Optional content: release point*	ALL

TOPIC ATM 4 — COORDINATION				
ACP ATM 4.3.2	Analyse the effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air–ground communications and separation, release point, transfer of control, etc.*	ALL
ACP ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5		ALL
ACP ATM 4.3.4	Ensure that the agreed course of action is carried out.	4		ALL
ACP ATM 4.3.5	Coordinate when providing FIS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
ACP ATM 4.3.6	Coordinate when providing ALRS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
TOPIC ATM 5 — ALTIMETRY AND LEVEL ALLOCATION				
Subtopic ATM 5.1 — Altimetry				
ACP ATM 5.1.1	Allocate levels according to altimetry data.	4	Regulation (EU) No 923/2012	ALL
ACP ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
Subtopic ATM 5.2 — Terrain clearance				
ACP ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum ~~safe~~ usable levels and terrain clearance.	4	*Optional content: terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APP ACP
TOPIC ATM 6 — SEPARATIONS				
Subtopic ATM 6.1 — Vertical separation				
ACP ATM 6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, level allocation, during climb/descent, rate of climb/descent, RVSM, non-RVSM aircraft, holding pattern	ACP ACS
ACP ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: level allocation, during climb/descent, rate of climb/descent, degraded aircraft performance, non-RVSM aircraft, reported severe turbulence*	APP ACP APS ACS
ACP ATM 6.1.3	Appreciate the application of emergency vertical separation.	3	Regulation (EU) No 923/2012, ICAO Doc 4444, ICAO Doc 7030	APP ACP

TOPIC ATM 6 — SEPARATION~~S~~				
				APS ACS
Subtopic ATM 6.2 — Horizontal separation				
ACP ATM 6.2.1	Provide longitudinal separation.	4	Regulation (EU) 2017/373, ~~B~~based on time, based on distance (DME and/or GNSS, RNAV) *Optional content: based on time with Mach number technique*	ACP
ACP ATM 6.2.2	Provide lateral separation.	4	Regulation (EU) 2017/373, ~~ICAO Doc 4444,~~ ICAO Doc 7030, holding	APP ACP
ACP ATM 6.2.3	Provide track separation.	4		ACP APP
ACP ATM 6.2.4	Provide geographical separation.	4	Visual, using navigation aids, area navigation	ACP APP

TOPIC ATM 7 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS				
Subtopic ATM 7.1 — Airborne safety nets ~~collision avoidance systems~~				
ACP ATM 7.1.1	Recognise the independence of ~~Differentiate between~~ ACAS ~~advisory~~ thresholds from ~~and~~ ATC separation standards ~~applicable in the area control environment~~.	~~2~~ 1	ICAO Doc 9863 *Optional content: Skybrary Safety Nets ~~EUROCONTROL TCAS web page~~*	~~ACP~~ ~~ACS~~ ALL
ACP ATM 7.1.2	Describe the controller responsibility during and following an ACAS RA reported by the pilot.	2	~~ICAO Doc 4444~~ Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, ICAO Doc 9863, Skybrary Safety Nets*	ALL
ACP ATM 7.1.3	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS~~, TAWS~~ *Optional content: TAWS, Skybrary Safety Nets ~~EUROCONTROL ACAS web page~~*	~~ALL~~ APP APS ACP ACS

TOPIC ATM 8 — DATA DISPLAY				
Subtopic ATM 8.1 — Data management				
ACP ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip-marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
ACP ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
ACP ATM	Organise pertinent data on data displays.	4		ALL

TOPIC ATM 8 — DATA DISPLAY				
8.1.3				
ACP ATM 8.1.4	Obtain flight plan information.	3	CPL, ~~FPL,~~ supplementary information *Optional content: FPL, ~~RPL,~~ AFIL, etc.*	ALL
ACP ATM 8.1.5	Use flight plan information.	3		ALL

TOPIC ATM 9 — OPERATIONAL ENVIRONMENT (SIMULATED)				
Subtopic ATM 9.1 — Integrity of the operational environment				
ACP ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: local/simulator operation manuals, briefing, notices, ~~local orders,~~ current flight plan data/information displays, pilot reports, coordination, verification of information*	ALL
ACP ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS
Subtopic ATM 9.2 — Verification of the currency of operational procedures				
ACP ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, letters of agreement (LoAs), NOTAMs, AICs*	ALL
ACP ATM 9.2.2	Manage traffic in accordance with a change to operational procedures.	4		APP ACP APS ACS
Subtopic ATM 9.3 — Handover–takeover				
ACP ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
ACP ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
ACP ATM 9.3.3	List possible actions to provide a safe position handover–takeover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ACP ATM 9.3.4	Explain the consequences of a missed position handover–takeover process.	2		ALL

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
Subtopic ATM 10.1 — Responsibility for the provision of control service and the processing of information				
ACP ATM 10.1.1	Describe the division of responsibility among air traffic control units.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	*ALL*

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
ACP ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ACP ATM 10.1.3	Describe the responsibility in regard to unmanned free balloons.	2	Regulation (EU) No 923/2012	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ *ALL*
~~ACP ATM 10.1.4~~	~~Obtain operational information.~~	~~3~~	~~ICAO Doc 4444, local operation manuals~~	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~
ACP ATM 10.1.~~5~~4	Interpret operational information.	5		APP ACP APS ACS
ACP ATM 10.1.~~6~~5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
ACP ATM 10.1.~~7~~6	Integrate operational information into control decisions.	4		APP ACP APS ACS
ACP ATM 10.1.~~8~~7	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*
Subtopic ATM 10.2 — Area control				
ACP ATM 10.2.1	Explain the responsibility for the provision of area procedural control service.	2	~~ICAO Doc 4444~~, Regulation (EU) 2017/373 ~~ICAO Annex 11,~~ Regulation (EU) No 923/2012 ~~local operation manuals~~ *Optional content: local/simulator operation manuals*	ACP
ACP ATM 10.2.2	Provide planning, coordination and control actions appropriate to VFR and IFR traffic in VMC and IMC.	4	Regulation (EU) No 923/2012, Regulation (EU) 2017/373, ICAO Doc 4444	ACP ~~*APP*~~ ~~*APS*~~ *ACS*
Subtopic ATM 10.3 — Traffic management process				
ACP ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, traffic projection	APP ACP
ACP ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		*ALL*

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
ACP ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
ACP ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		~~APP ACP APS ACS~~ *ALL*
ACP ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
ACP ATM 10.3.6	Ensure ~~an~~ the adequate prioritisation~~y~~ of actions.	4		*ALL*
ACP ATM 10.3.7	Execute the selected plan in a timely manner.	3		~~APP ACP APS ACS~~ *ALL*
ACP ATM 10.3.8	Ensure that a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow-up	*ALL*
Subtopic ATM 10.4 — Handling traffic				
ACP ATM 10.4.1	Manage arrivals, departures and overflights.	4	*Optional content: simulator operation procedures*	APP ACP APS ACS
ACP ATM 10.4.2	Balance the workload against personal capacity.	5	*Optional content: rerouting, replanning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS

TOPIC ATM 11 — HOLDING				
Subtopic ATM 11.1 — ~~General h~~Holding procedures				
ACP ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, Regulation (EU) No 923/2012, Regulation (EU) 2017/373, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
ACP ATM 11.1.2	Appreciate the factors affecting holding patterns.	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
Subtopic ATM 11.2 — Holding aircraft				

TOPIC ATM 11 — HOLDING				
ACP ATM 11.2.1	Issue expected onward clearance times.	3		ACP ACS

SUBJECT 4: METEOROLOGY

~~The subject objective is:~~

~~Learners shall acquire, decode and make proper use of meteorological information relevant to the provision of ATS.~~

TOPIC MET 1 — METEOROLOGICAL PHENOMENA				
Subtopic MET 1.1 — Meteorological phenomena				
ACP MET 1.1.1	Appreciate the impact of adverse weather on aircraft.	3	Thunderstorms, icing, jet streams, clear-air turbulence (CAT), turbulence, microburst, severe mountain waves, squall lines, volcanic ash *Optional content: solar radiation*	ACP ACS
ACP MET 1.1.2	Integrate data about meteorological phenomena into the provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena*	*ALL*
ACP MET 1.1.3	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS

TOPIC MET 2 — SOURCES OF METEOROLOGICAL DATA				
Subtopic MET 2.1 — Sources of meteorological information				
ACP MET 2.1.1	Obtain meteorological information.	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/~~-~~special AIREP*	APP ACP APS ACS
ACP MET 2.1.2	Decode information from meteorological data displays.	3		*ALL*
ACP MET 2.1.~~2~~3	Relay meteorological information.	3	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: flight information centre, adjacent ATS unit*	*ALL*

SUBJECT 5: NAVIGATION

~~The subject objective is:~~

~~Learners shall analyse all navigational aspects in order to organise the traffic.~~

TOPIC NAV 1 — MAPS AND AERONAUTICAL CHARTS				
Subtopic NAV 1.1 — Maps and charts				
ACP NAV 1.1.1	Use relevant maps and charts.	3		~~*APP*~~ ~~ACP~~ ~~*APS*~~ ~~ACS~~ *ALL*
ACP NAV 1.1.2	Decode symbols and information displayed on aeronautical maps and charts.	3	En-route and area charts *Optional content: STAR charts*	ACP ACS

TOPIC NAV 2 — INSTRUMENT NAVIGATION				
Subtopic NAV 2.1 — Navigational systems				
ACP NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, availability and status of ground-based and satellite-based systems*	APP ACP APS ACS
ACP NAV 2.1.2	Appreciate the effect of a change in the operational status of navigational systems.	3	*Optional content: precision, limitations, status, degraded procedures*	*ALL*
Subtopic NAV 2.2 — Navigational assistance				
ACP NAV 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	*APP* ACP *APS* ACS
Subtopic NAV 2.3 — PBN applications				
ACP NAV 2.3.1	State the navigation applications used in terminal and en-route environments.	1	Terminal-RNAV-1 ~~(=P-RNAV)~~, En-route-RNAV-5 ~~(B-RNAV)~~ *Optional content: A-RNP,* ~~*EC PBN Implementing Rule (*~~*Commission Implementing Regulation (EU) 2018/1048 (the PBN Regulation), ICAO Doc 9613*	ACP ACS
ACP NAV 2.3.2	Explain the principles and designation of navigation specifications in use.	2	Performance, functionalities, sensors *Optional content:* ~~*performance, functionality, sensors,*~~ *aircrew and controller requirements, accuracy requirements, integrity and continuity*	*APP* ACP *APS* ACS
ACP NAV 2.3.3	Describe the differences in turn performance.	2	*Optional content: fly-by, fly-over, FRT, ICAO Doc 4444*	ACP ACS
ACP NAV 2.3.~~3~~4	State future PBN developments.	1	A-RNP, RNP (AR) DEP *Optional content: RNP 3D, VNAV, 4D, TBO*	*ALL* ~~*ADI*~~ ~~*APP*~~

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TOPIC NAV 2 — INSTRUMENT NAVIGATION				
				~~ACP~~ ~~APS~~ ~~ACS~~

SUBJECT 6: AIRCRAFT

~~The subject objective is:~~

~~Learners shall assess and integrate aircraft performance in the provision of ATS.~~

TOPIC ACFT 1 — AIRCRAFT INSTRUMENTS				
Subtopic ACFT 1.1 — Aircraft instruments				
ACP ACFT 1.1.1	Integrate information from aircraft instruments provided by the pilot into the provision of ATS.	4		ALL
ACP ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios*	ALL

TOPIC ACFT 2 — AIRCRAFT CATEGORIES				
Subtopic ACFT 2.1 — Wake turbulence				
ACP ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to succeeding aircraft.	2		ALL
ACP ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence to succeeding aircraft.	3		ALL

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.1 — Climb factors				
ACP ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
Subtopic ACFT 3.2 — Cruise factors				
ACP ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	ACP ACS
Subtopic ACFT 3.3 — Descent factors				
ACP ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, cabin pressurisation*	ACP ACS
Subtopic ACFT 3.4 — Economic factors				
ACP ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile, top of descent*	ACP ACS
ACP ACFT 3.4.2	Use continuous climb techniques where applicable.	3		*APP* ACP
ACP ACFT 3.4.3	Use direct routing where applicable.	3		*APP* ACP *APS* ACS

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.5 — Environmental factors				
ACP ACFT 3.5.1	Appreciate the performance restrictions due to environmental considerations.	3	*Optional content: fuel-dumping, minimum flight levels, continuous descent operations*	ACP ACS

TOPIC ACFT 4 — AIRCRAFT DATA				
Subtopic ACFT 4.1 — Performance data				
ACP ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS

SUBJECT 7: HUMAN FACTORS

~~The subject objective is:~~

~~Learners shall recognise the necessity to constantly extend their knowledge and analyse factors which affect personal and team performance.~~

TOPIC HUM 1 — INFORMATION PROCESSING ~~PSYCHOLOGICAL FACTORS~~				
Subtopic HUM 1.1 — Cognition~~ve~~ and factors influencing it				
ACP HUM 1.1.1	Describe the human information-processing model.	2	Attention, perception, memory, situational awareness, decision-making, response	ALL
ACP HUM 1.1.2	Describe the factors which influence human information-processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
~~ACP HUM 1.1.3~~	~~Monitor the effect of human information-processing factors on decision-making.~~	~~3~~	~~*Optional content: workload, stress, interpersonal relations, distraction, confidence*~~	~~ALL~~
Subtopic HUM 1.2 — Situational awareness				
ACP HUM 1.2.1	Appreciate the effect of factors on human information-processing in relation to situational awareness.	3	*Optional content: workload, knowledge, interpersonal relations, distraction, confidence, experience, fatigue, stress*	ALL
Subtopic HUM 1.3 — Decision-making				
ACP HUM 1.3.1	Appreciate the effect of factors on human information-processing in relation to decision-making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
Subtopic HUM 2.1 — Fatigue				
~~ACP HUM 2.1.1~~	~~State factors that cause fatigue.~~	~~1~~	~~Shift work~~ ~~*Optional content: night shifts and rosters, Regulation (EU) 2017/373, ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	~~ALL~~
ACP HUM 2.1.~~2~~1	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management* ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	ALL
ACP HUM 2.1.~~3~~2	Recognise the onset of fatigue in self and in others.	1	*Optional content:* ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~ *Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL
~~ACP HUM 2.1.4~~	~~Recognise the onset of fatigue in others.~~	~~1~~		~~ALL~~

TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
ACP HUM 2.1.~~5~~3	Describe the appropriate action when recognising fatigue.	2	*Optional content: Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL
~~**Subtopic HUM 2.2 — Fitness**~~				
~~ACP HUM 2.2.1~~	~~Recognise signs of lack of personal fitness.~~	~~1~~		~~ALL~~
~~ACP HUM 2.2.2~~	~~Describe actions when aware of a lack of personal fitness.~~	~~2~~		~~ALL~~
Subtopic HUM 2.2 — Stress				
ACP HUM 2.2.1	Recognise the effects of stress on human performance.	1	Stress and its symptoms in self and in others *Optional content: Regulation (EU) 2017/373*	ALL
ACP HUM 2.2.2	Describe the appropriate action when recognising stress.	2		ALL
ACP HUM 2.2.3	Act to reduce stress.	3		ALL
ACP HUM 2.2.4	Respond to a stressful situation by offering, asking for or accepting assistance.	3		ALL
ACP HUM 2.2.5	Recognise the effect of stressful events.	1	Self and others, abnormal situations	ALL
TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
Subtopic HUM 3.1 — Threat and error management framework				
ACP HUM 3.1.1	Explain the importance of threat and error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*	ALL
ACP HUM 3.1.2	Explain the threat and error management framework.	2	Threats, errors, undesired states, countermeasures *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 3.1.3	Differentiate between the different types of threats in ATC.	2	Internal, external, airborne, environmental *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 3.1.4	Differentiate between the different types of errors in ATC.	2	Equipment, procedural, communication *Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL

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TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
ACP HUM 3.1.5	Differentiate between the different types of undesired states.	2	On the ground, airborne *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 3.1.6	Analyse examples of threat and error management in ATC.	4	Case studies *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
Subtopic HUM 3.2 — Application of threat and error management				
ACP HUM 3.2.1	Manage threats.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 3.2.2	Manage errors.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 3.2.3	Manage undesired states.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~**Subtopic HUM 3.1 — Team resource management (TRM)**~~				
~~ACP HUM 3.1.1~~	~~State the relevance of TRM.~~	~~1~~	~~*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*~~	~~ALL~~
~~ACP HUM 3.1.2~~	~~State the content of the TRM concept.~~	~~1~~	~~*Optional content: teamwork, human error, team roles, stress, decision-making, communication, situational awareness*~~	~~ALL~~
~~**Subtopic HUM 3.2 — Teamwork and team roles**~~				
~~ACP HUM 3.2.1~~	~~Identify reasons for conflict.~~	~~3~~		~~ALL~~
~~ACP HUM 3.2.2~~	~~Describe actions to prevent human conflicts.~~	~~2~~	~~*Optional content: TRM team roles*~~	~~ALL~~
~~ACP HUM 3.2.3~~	~~Describe strategies to cope with human conflicts.~~	~~2~~	~~*Optional content: in your team, in the simulator*~~	~~ALL~~
~~**Subtopic HUM 3.3 — Responsible behaviour**~~				
~~ACP HUM 3.3.1~~	~~Consider the factors which influence responsible behaviour.~~	~~2~~	~~*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*~~	~~ALL~~

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~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~ACP HUM 3.3.2~~	~~Apply responsible judgement.~~	~~3~~	~~Case study and discussion about a dilemma situation~~	~~ALL~~

TOPIC HUM 4 — TEAMWORK ~~STRESS~~				
Subtopic HUM 4.1 — Benefits of teamwork ~~Stress~~				
~~ACP HUM 4.1.1~~	~~Recognise the effects of stress on performance.~~	~~1~~	~~Stress and its symptoms in self and in others~~ ~~*Optional content: Regulation (EU) 2017/373*~~	~~ALL~~
ACP HUM 4.1.1	State the benefits of teamwork.	1	Increased safety, efficiency and capacity	ALL
ACP HUM 4.1.2	List the controller's human performance elements affected by teamwork.	1	Situational awareness, communication, decision-making, threat and error management, workload management	ALL
Subtopic HUM 4.2 — Conflict ~~Stress~~ management				
~~ACP HUM 4.2.1~~	~~Act to reduce stress.~~	~~3~~	~~The effect of personality in coping with stress, the benefits of active stress management~~	~~ALL~~
~~ACP HUM 4.2.2~~	~~Respond to stressful situations by offering, asking or accepting assistance.~~	~~3~~	~~*Optional content: the benefits of offering, accepting and asking for help in stressful situations*~~	~~ALL~~
~~ACP HUM 4.2.3~~	~~Recognise the effect of shocking and stressful events.~~	~~1~~	~~Self and others, abnormal situations, Critical Incident Stress Management (CISM)~~	~~ALL~~
~~ACP HUM 4.2.4~~	~~Consider the benefits of Critical Incident Stress Management (CISM).~~	~~2~~		~~ALL~~
~~ACP HUM 4.2.5~~	~~Explain procedures to be used following an incident/accident.~~	~~2~~	~~*Optional content: CISM, counselling, human element*~~	~~ALL~~
ACP HUM 4.2.1	Identify the reasons for conflict.	3		ALL
ACP HUM 4.2.2	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
ACP HUM 4.2.3	Describe actions to prevent human conflicts.	2		ALL

TOPIC HUM 5 — SYSTEMS				
Subtopic HUM 5.1 — Concept of systems in ATM/ANS				
ACP HUM 5.1.1	Explain the concept of systems.	2	People; procedures; equipment; ATM in system terms: simple, complicated, and complex systems; system thinking	ALL

TOPIC HUM 5 — SYSTEMS				
ACP HUM 5.1.2	Describe how changes in one part of a system may impact the other parts.	2		ALL
ACP HUM 5.1.3	Describe the role of the human in the system.	2		ALL

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~Subtopic HUM 5.1 — Human error~~				
~~ACP HUM 5.1.1~~	~~Explain the relationship between error and safety.~~	~~2~~	~~Number and combination of errors, proactive versus reactive approach to discovery of error~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACP HUM 5.1.2~~	~~Differentiate between the types of error.~~	~~2~~	~~Slips, lapses, mistakes~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACP HUM 5.1.3~~	~~Describe error-prone conditions.~~	~~2~~	~~*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*~~	~~ALL~~
~~ACP HUM 5.1.4~~	~~Collect examples of different error types, their causes and consequences for ATC.~~	~~3~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACP HUM 5.1.5~~	~~Explain how to detect errors to compensate for them.~~	~~2~~	~~STCA, MSAW, individual and collective strategy~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACP HUM 5.1.6~~	~~Execute corrective actions.~~	~~3~~	~~Error compensation~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACP HUM 5.1.7~~	~~Explain the importance of error management.~~	~~2~~	~~*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*~~	~~ALL~~
~~ACP HUM 5.1.8~~	~~Describe the impact on an ATCO's performance following an occurrence/incident.~~	~~2~~	~~*Optional content: reporting, SMS, investigation, CISM*~~	~~ALL~~
~~Subtopic HUM 5.2 — Violation of rules~~				
~~ACP HUM 5.2.1~~	~~Explain the causes and dangers of violation of rules becoming accepted as a practice.~~	~~2~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~

TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
Subtopic HUM 6.1 — Effective ~~C~~communication				
~~ACP HUM 6.1.1~~	~~Use communication effectively in ATC.~~	~~3~~		~~ALL~~
ACP HUM 6.1.1	Explain effective communication in ATC operations.	2	ICAO Doc 9868	ALL
~~ACP HUM 6.1.2~~	~~Analyse examples of pilot–controller communication for effectiveness.~~	~~4~~		~~ALL~~
ACP HUM 6.1.2	Explain key strategies used to enable open communication.	2	*Optional content: active listening, active speaking, assertiveness, honesty, relevance, facts, neutrality*	ALL
ACP HUM 6.1.3	Describe the parameters affecting the controller's competence to communicate effectively.	2	Workload, mutual knowledge, controller versus pilot mental picture, distractions, sounds, human conflicts *Optional content: communication between and within the team(s), in the simulator, with the pilots, instructors, coordination partners*	ALL
Subtopic HUM 6.2 — Effective feedback				
ACP HUM 6.2.1	Define feedback.	1		ALL
ACP HUM 6.2.2	Explain the purpose of receiving and giving feedback, and its effect on human performance.	2		ALL
ACP HUM 6.2.3	Consider the impact of communication styles on feedback and conflict resolution.	2		ALL
ACP HUM 6.2.4	Integrate feedback into performance.	4		ALL
~~**Subtopic HUM 6.2 — Collaborative work within the same area of responsibility**~~				
~~ACP HUM 6.2.1~~	~~List communication means between controllers in charge of the same area of responsibility (sector or tower).~~	~~1~~	~~*Optional content: electronic, written, verbal and non-verbal communication*~~	~~ALL~~
~~ACP HUM 6.2.2~~	~~Explain consequences of the use of communication means on effectiveness.~~	~~2~~	~~*Optional content: strip legibility and encoding, label designation, feedback*~~	~~ALL~~
~~ACP HUM 6.2.3~~	~~List possible actions to provide a safe position handover.~~	~~1~~	~~*Optional content: rigour, preparation, overlap time*~~	~~ALL~~
~~ACP HUM 6.2.4~~	~~Explain consequences of a missed position handover process.~~	~~2~~		~~ALL~~
~~**Subtopic HUM 6.3 — Collaborative work between different areas of responsibility**~~				

TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
~~ACP HUM 6.3.1~~	~~List factors and means for an effective coordination between sectors and/or tower positions.~~	~~1~~	~~*Optional content: other sectors' constraints, electronic coordination tools*~~	~~ALL~~
~~Subtopic HUM 6.4 — Controller–pilot cooperation~~				
~~ACP HUM 6.4.1~~	~~Describe parameters affecting controller–pilot cooperation.~~	~~2~~	~~*Optional content: workload, mutual knowledge, controller versus pilot mental picture*~~	~~ALL~~

SUBJECT 8: EQUIPMENT AND SYSTEMS

~~The subject objective is:~~

~~Learners shall integrate knowledge and understanding of the basic working principles of equipment and systems, and comply with the equipment and system degradation procedures in the provision of ATS.~~

TOPIC EQPS 1 — VOICE COMMUNICATIONS				
Subtopic EQPS 1.1 — Radio communications				
ACP EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ACP EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
ACP EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
Subtopic EQPS 1.2 — Other voice communications				
ACP EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL

TOPIC EQPS 2 — AUTOMATION IN ATS				
Subtopic EQPS 2.1 — Aeronautical fixed telecommunication network (AFTN)				
ACP EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAMs, SNOWTAMs, BIRDTAMs, etc.*	ALL
Subtopic EQPS 2.2 — Automatic data interchange				
ACP EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: automated information and coordination, OLDI*	APP ACP

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
Subtopic EQPS 3.1 — Operation and monitoring of equipment				
ACP EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ACP EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems, UDF/VDF*	ALL
ACP EQPS 3.1.3	Operate available equipment in abnormal and emergency situations.	3		ALL
Subtopic EQPS 3.2 — Situation displays and information systems				
ACP EQPS 3.2.1	Use situation displays.	3		ALL

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
ACP EQPS 3.2.2	Check availability of information.	3		ALL
ACP EQPS 3.2.3	Obtain information from equipment.	3		APP ACP APS ACS
Subtopic EQPS 3.3 — Flight data systems				
ACP EQPS 3.3.1	Use the flight data information at the controller working position.	3		ALL

TOPIC EQPS 4 — FUTURE EQUIPMENT				
Subtopic EQPS 4.1 — New developments				
ACP EQPS 4.1.1	Recognise future developments.	1	New advanced systems *Optional content: European ATM Master Plan, European Plan for Aviation Safety*	ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
Subtopic EQPS 5.1 — Reaction to limitations				
ACP EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
ACP EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
Subtopic EQPS 5.2 — Communication equipment degradation				
ACP EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground–air and landline communications*	APP ACP APS ACS
ACP EQPS 5.2.2	Apply contingency procedures in the event of communication equipment degradation.	3	*Optional content: procedures for total or partial degradation of ground–air and landline communications, alternative methods of transferring data*	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL
Subtopic EQPS 5.3 — Navigational equipment degradation				
ACP EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: ~~VOR,~~ navigational aids, 'European GNSS Contingency/Reversion Handbook for PBN Operations'*	ALL
ACP EQPS 5.3.2	Apply contingency procedures in the event of ~~a~~ navigational equipment degradation.	3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	~~ADI~~ ~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL

SUBJECT 9: PROFESSIONAL ENVIRONMENT

~~The subject objective is:~~

~~Learners shall identify the need for close cooperation with other parties concerning ATM operations and appreciate aspects of environmental protection.~~

TOPIC PEN 1 — FAMILIARISATION				
Subtopic PEN 1.1 — Study visit to an area control centre				
ACP PEN 1.1.1	Appreciate the functions and provision of operational area control service.	3	Study visit to an area control centre	ACP ACS

TOPIC PEN 2 — AIRSPACE USERS				
Subtopic PEN 2.1 — Contributors to civil ATS operations				
ACP PEN 2.1.1	Characterise civil ATS activities in an area control centre.	2	Study visit to an area control centre *Optional content: familiarisation visits to TWR, APP, AIS, RCC*	ACP ACS
ACP PEN 2.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to engineering services, firefighting and emergency services, airline operations offices*	ALL
Subtopic PEN 2.2 — Contributors to military ATS operations				
ACP PEN 2.2.1	Characterise military ATS activities.	2	*Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, ~~A~~air ~~D~~defence ~~U~~units*	ALL

TOPIC PEN 3 — CUSTOMER RELATIONS				
Subtopic PEN 3.1 — Provision of services and user requirements				
ACP PEN 3.1.1	Appreciate ~~Identify~~ the role of an air navigation ~~ATC as a~~ service provider.	3	Regulation (EU) 2018/1139	ALL
ACP PEN 3.1.2	Appreciate ATS users' requirements.	3		ALL

TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
Subtopic PEN 4.1 — Environmental protection				
ACP PEN 4.1.1	Appreciate the mitigation techniques used en-route to minimise ~~the~~ aviation's impact on the environment.	3	*Optional content: free route airspace (FRA), night/weekend routes, ICAO Doc 10013 ~~Circular 303~~ — Operational opportunities to reduce ~~Minimize~~ fuel burn ~~Use~~ and ~~Reduce~~ emissions*	ACP ~~ACS~~

SUBJECT 10: ABNORMAL AND EMERGENCY SITUATIONS

~~The subject objective is:~~

~~Learners shall develop a professional attitude to manage traffic in abnormal and emergency situations.~~

TOPIC ABES 1 — ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 1.1 — Overview of ABES				
ACP ABES 1.1.1	List common abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure, unreliable instruments, runway incursion, GNSS failure*	ALL
ACP ABES 1.1.2	Identify potential or actual abnormal and emergency situations.	3		ALL
ACP ABES 1.1.3	Take into account the procedures for given abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
ACP ABES 1.1.4	Take into account that procedures do not exist for all abnormal and emergency situations.	2	*Optional content: real-life examples*	ALL
ACP ABES 1.1.5	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.1 — Communication effectiveness				
ACP ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, radio silence instruction	ALL
ACP ABES 2.1.2	Apply change of radiotelephony call sign.	3	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444*	ALL
Subtopic ABES 2.2 — Avoidance of mental overload				
ACP ABES 2.2.1	Describe actions to keep the situation under control.	2	*Optional content: sector-splitting, holding, flow management, task delegation*	ALL
ACP ABES 2.2.2	Organise priority of actions.	4		ALL
ACP ABES 2.2.3	Ensure the effective dissemination of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.*	ALL
ACP ABES 2.2.4	Consider asking for help.	2		ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.3 — Air–ground cooperation				
ACP ABES 2.3.1	Collect appropriate information relevant to the situation.	3		ALL
ACP ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL

TOPIC ABES 3 — PROCEDURES FOR ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 3.1 — Application of procedures for ABES				
ACP ABES 3.1.1	Apply the procedures for given abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure*	ALL
Subtopic ABES 3.2 — Radio failure				
ACP ABES 3.2.1	Describe the procedures to be followed by a pilot when experiencing ~~that pilot experiences~~ complete or partial radio failure.	2	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, military procedures, simulator operation procedures*	ALL
ACP ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	Regulation (EU) No 923/2012 *Optional content: prolonged loss of communication*	ALL
Subtopic ABES 3.3 — Unlawful interference and aircraft bomb threat				
ACP ABES 3.3.1	Apply the ATC procedures associated with unlawful interference and aircraft bomb threat.	3	Regulation (EU) No 923/2012 *Optional content: simulator operation procedures*	ALL
Subtopic ABES 3.4 — Strayed or unidentified aircraft				
ACP ABES 3.4.1	Apply the procedures for~~in the case of~~ strayed aircraft.	3	Regulation (EU) No 923/2012 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ACP ABES 3.4.2	Apply the procedures for~~in the case of~~ unidentified aircraft.	3	Regulation (EU) No 923/2012	ALL
Subtopic ABES 3.5 — Diversion~~s~~				
ACP ABES 3.5.1	Provide navigational assistance to aircraft diverting in emergency.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS
Subtopic ABES 3.6 — Interception of civil aircraft				
ACP ABES 3.6.1	Explain the procedures in the event of interception of civil aircraft.	2	Regulation (EU) No 923/2012	*ALL*

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AMC1 ATCO.D.010(a)(2)(iv) Composition of initial training

APPROACH CONTROL SURVEILLANCE RATING (APS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

(a) The general principles that apply to this AMC are contained in AMC1 ATCO.D.010(a).

(b) The ATCO ~~R~~rating training Approach Control Surveillance Rating (APS) should contain the following ~~subject objectives and~~ training objectives that are associated with the subjects, topics and subtopics contained in Appendix ~~7~~6 Approach Control Surveillance Rating (APS) to Annex I to Commission Regulation (EU) 2015/340 ~~— Approach Control Surveillance Rating (APS)~~.

(c) Subjects, topics and subtopics from Appendix ~~7~~6 to Annex I to Commission Regulation (EU) 2015/340 are repeated in this AMC for the convenience of the reader and do not form part of it.

SUBJECT 1: INTRODUCTION TO THE COURSE

~~The subject objective is:~~
~~Learners shall know and understand the training programme that they will follow and learn how to obtain the appropriate information.~~

TOPIC INTR 1 — COURSE MANAGEMENT				
Subtopic INTR 1.1 — Course introduction				
APS INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
Subtopic INTR 1.2 — Course administration				
APS INTR 1.2.1	State how the course is administered.	1		ALL
Subtopic INTR 1.3 — Study material and training documentation				
APS INTR 1.3.1	Use appropriate documents and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
APS INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
Subtopic INTR 2.1 — Course content and organisation				
APS INTR 2.1.1	State the different training methods used during the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
APS INTR 2.1.2	State the subjects covered by the course and their purpose.	1		ALL
APS INTR	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
2.1.3				
APS INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
Subtopic INTR 2.2 — Training ethos				
APS INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner–instructor feedback, instructor–instructor feedback	ALL
Subtopic INTR 2.3 — Assessment process				
APS INTR 2.3.1	Describe the assessment process.	2		ALL

SUBJECT 2: AVIATION LAW

~~The subject objective is:~~

~~Learners shall know, understand and apply the Rules of the Air and the Regulations regarding reporting and airspace, and appreciate the Licensing and Competence principles.~~

TOPIC LAW 1 — ATCO LICENSING/CERTIFICATE OF COMPETENCE				
Subtopic LAW 1.1 — Privileges and conditions				
APS LAW 1.1.1	Appreciate the conditions which shall be met to issue an Approach Control Surveillance rating.	3	Regulation (EU) 2015/340[37] ~~on ATCO Licensing~~ *Optional content: national documents*	APS
APS LAW 1.1.2	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
APS LAW 1.1.3	Explain the conditions for the suspension/~~-~~revocation of an ATCO licence.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~	ALL

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.1 — Reports				
~~APS LAW 2.1.1~~	~~List the standard forms for reports.~~	~~1~~	~~Air traffic incident report~~ ~~*Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*~~	~~ALL~~
APS LAW 2.1.~~2~~1	Describe the functions of, and processes for, reporting.	2	Reporting culture, forms for mandatory and voluntary occurrence reporting ~~air traffic incident report~~, Regulation (EU) No 376/2014[38], Regulation (EU) 2015/1018[39] *Optional content: breach of regulations, watchbook/logbook, records, voluntary reporting*	ALL
APS LAW 2.1.~~3~~2	Use forms for reporting.	3	Regulation (EU) No 376/2014, forms for mandatory and voluntary occurrence reporting ~~air traffic incident reporting form(s)~~ *Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*	ALL

[37] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1).

[38] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

[39] Commission Implementing Regulation (EU) 2015/1018 of 29 June 2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council (OJ L 163, 30.6.2015, p. 1).

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.2 — Airspace				
APS LAW 2.2.1	Appreciate airspace classes and structure and their relevance to operations using the Approach Control Surveillance rating.	3		APS
APS LAW 2.2.2	Provide planning, coordination and control actions appropriate to the classification and structure of given airspace.	4	*Optional content: Regulation (EU) No 923/2012[40], international requirements, civil requirements, military requirements, areas of responsibility, sectorisation, national requirements*	ALL
APS LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

TOPIC LAW 3 — ATS ~~ATC~~ SAFETY MANAGEMENT				
Subtopic LAW 3.1 — Feedback process				
APS LAW 3.1.1	State the importance of controller contribution to the feedback process.	1	*Optional content: voluntary reporting*	ALL
APS LAW 3.1.2	Describe how reported occurrences are analysed.	2	*Optional content: Regulation (EU) No 376/2014, local procedures*	ALL
APS LAW 3.1.3	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards, web pages*	ALL
APS LAW 3.1.4	Appreciate the just culture ~~'Just Culture'~~ concept.	3	Benefits, prerequisites, constraints *Optional content:* *~~https://www.s~~Skybrary~~.aero~~*	ALL
Subtopic LAW 3.2 — Safety ~~i~~investigation				
APS LAW 3.2.1	Describe the role and objectives ~~mission~~ of ~~S~~safety ~~i~~investigation in the improvement of safety.	2		ALL
~~APS LAW 3.2.2~~	~~Define working methods of Safety Investigation.~~	~~1~~		~~ALL~~

[40] Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

SUBJECT 3: AIR TRAFFIC MANAGEMENT

~~The subject objective is:~~

~~Learners shall manage air traffic to ensure safe, orderly and expeditious services.~~

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.1 — Air traffic control (ATC) service				
APS ATM 1.1.1	Appreciate own area of responsibility.	3		APP ACP APS ACS
APS ATM 1.1.2	Provide approach control service.	4	Regulation (EU) No 923/2012, Regulation (EU) 2017/373, operating procedures for the simulated/training environment ~~ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals~~	APP APS
Subtopic ATM 1.2 — Flight information service (FIS)				
APS ATM 1.2.1	Provide FIS.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: national documents*	*ALL*
APS ATM 1.2.2	Use an ATS surveillance system in the provision of FIS.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373, information to identified aircraft concerning: traffic, navigation *Optional content: weather*	APS ACS
APS ATM 1.2.3	Issue appropriate information concerning the position of conflicting traffic.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373, traffic information, essential traffic information	APS ACS *APP ACP*
APS ATM 1.2.4	Appreciate the use of ATIS in the provision of FIS~~flight information service~~.	3	Regulation (EU) No 923/2012	*ALL*
Subtopic ATM 1.3 — Alerting service (ALRS)				
APS ATM 1.3.1	Provide ALRS.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: national documents*	ALL
APS ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10~~, ICAO Doc 4444~~ *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ICAO Doc 4444, national documents*	ALL
APS ATM 1.3.3	Use an ATS surveillance system in the provision of ALRS.	3		APS ACS

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.4 — ATS system capacity and air traffic flow management (ATFM)				
APS ATM 1.4.1	Appreciate the impact of the ATS system capacity and air traffic flow management on the controller.	3	*Optional content: EUROCONTROL ATFCM Users Manual, FABs, FUA, free route airspace, local implementation of ATFCM principles, etc.*	APP ACP APS ACS
APS ATM 1.4.2	Take account of ~~Apply~~ flow management procedures in the provision of ATC.	~~3~~ 2	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ~~ACP~~ APS ~~ACS~~
APS ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
APS ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
APS ATM 1.4.5	Inform the supervisor of local factors affecting the ATS system capacity and air traffic flow management.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
APS ATM 1.4.6	Organise traffic flows and patterns to take account of the ATS surveillance system capability.	4		APS ACS
Subtopic ATM 1.5 — Airspace management (ASM)				
APS ATM 1.5.1	Appreciate the impact of ASM on the controller.	3	*Optional content: FABs, EUROCONTROL Specification for the application of FUA, TSAs, CDRs, CBAs, free route airspace*	APP ACP APS ACS
APS ATM 1.5.2	Organise traffic to take account of ASM.	4	Real-time activation, deactivation or reallocation of airspace *Optional content: CDR, TSA, TRA, CBA*	APS ACS

TOPIC ATM 2 — COMMUNICATION				
Subtopic ATM 2.1 — Effective communication				
APS ATM 2.1.1	List the means of communication between controllers.	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
APS ATM 2.1.2	Select the most suitable means of communication given the situation.	5		ALL

TOPIC ATM 2 — COMMUNICATION				
APS ATM 2.1.~~1~~3	Use approved phraseology.	3	Regulation (EU) No 923/2012 *Optional content: published national/local language phraseology*	ALL
APS ATM 2.1.~~2~~4	Ensure effective communication.	4	Use of plain language when required, communication within the sector/working position, between the sectors/WPs/ATC units ~~Communication techniques~~, readback/verification of readback	ALL
APS ATM 2.1.5	Analyse examples of pilot–controller communication for effectiveness.	4	*Optional content: real-life recordings, situation in the simulator*	ALL
TOPIC ATM 3 — ATC CLEARANCES AND ATC INSTRUCTIONS				
Subtopic ATM 3.1 — ATC clearances				
APS ATM 3.1.1	Issue appropriate ATC clearances.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
APS ATM 3.1.2	Integrate appropriate ATC clearances into the control service.	4		ALL
APS ATM 3.1.3	Ensure that the agreed course of action is carried out.	4		ALL
Subtopic ATM 3.2 — ATC instructions				
APS ATM 3.2.1	Issue appropriate ATC instructions.	3	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
APS ATM 3.2.2	Integrate appropriate ATC instructions into the control service.	4		ALL
APS ATM 3.2.3	Ensure that the agreed course of action is carried out.	4		ALL
TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.1 — Necessity for coordination				
APS ATM 4.1.1	Identify the need for coordination.	3		ALL
Subtopic ATM 4.2 — Tools and methods for coordination				
APS ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL

TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.3 — Coordination procedures				
APS ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air–ground communications and separation, transfer of control, etc., ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: release point*	ALL
APS ATM 4.3.2	Analyse the effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air–ground communications and separation, release point, transfer of control, etc.*	ALL
APS ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5		ALL
APS ATM 4.3.4	Ensure that the agreed course of action is carried out.	4		ALL
APS ATM 4.3.5	Coordinate when providing FIS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
APS ATM 4.3.6	Coordinate when providing ALRS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
TOPIC ATM 5 — ALTIMETRY AND LEVEL ALLOCATION				
Subtopic ATM 5.1 — Altimetry				
APS ATM 5.1.1	Allocate levels according to altimetry data.	4	Regulation (EU) No 923/2012	ALL
APS ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
Subtopic ATM 5.2 — Terrain clearance				
APS ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum ~~safe~~ usable levels and terrain clearance.	4	*Optional content: minimum vectoring altitude, terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APS ACS
TOPIC ATM 6 — SEPARATIONS				
Subtopic ATM 6.1 — Vertical separation				
APS ATM 6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, level allocation, during climb/descent, rate of climb/descent, holding pattern	APP APS

TOPIC ATM 6 — SEPARATION~~S~~				
APS ATM 6.1.2	Provide increased vertical separation.	4	Regulation (EU) No 923/2012, ICAO Doc 4444 *Optional content: level allocation, during climb/descent, rate of climb/descent, degraded aircraft performance, non-RVSM aircraft, reported severe turbulence*	APP ACP APS ACS
APS ATM 6.1.3	Appreciate the application of emergency vertical separation.	3	Regulation (EU) No 923/2012, ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
APS ATM 6.1.4	Provide vertical separation in a surveillance environment.	4	Pressure altitude-derived information, pilot-level reports *Optional content: into/out of ATS surveillance system coverage*	APS ACS
Subtopic ATM 6.2 — Longitudinal separation in a surveillance environment				
APS ATM 6.2.1	Provide longitudinal separation in a surveillance environment.	4	Successive departures, successive arrivals, overflights, speed control, silent transfer, ICAO Doc 4444	APS
Subtopic ATM 6.3 — Delegation of separation				
APS ATM 6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
APS ATM 6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	APP APS
Subtopic ATM 6.4 — Wake turbulence distance-based separation				
APS ATM 6.4.1	Provide distance-based wake turbulence separation.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: EASA SIB 2017-10 'En-route Wake Turbulence Encounters', national documents*	APS *ACS*
Subtopic ATM 6.5 — Separation based on ATS surveillance systems				
APS ATM 6.5.1	Describe how separation based on ATS surveillance systems is applied.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	APS *ACS*
APS ATM 6.5.2	Provide horizontal separation.	4	Regulation (EU) 2017/373 ~~ICAO Doc 4444, ICAO Doc 7030, local operation manuals, holding~~ *Optional content: local/simulator operation manuals, holding*	APS *ACS*
APS ATM 6.5.3	Provide horizontal separation by vectoring in a variety of situations.	4	*Optional content: transit, meteorological phenomena, vectoring for approach, departure versus transit versus arrival*	APS *ACS*
APS ATM 6.5.4	Ensure horizontal or vertical separation from airspace boundaries.	4	Adjacent sectors, restricted, prohibited and danger areas, TSAs	APS *ACS*

TOPIC ATM 7 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS				
Subtopic ATM 7.1 — Airborne safety nets ~~collision avoidance systems~~				
APS ATM 7.1.1	Recognise the independence of ACAS thresholds from ATC separation standards.	1	ICAO Doc 9863 *Optional content: Skybrary Safety Nets*	ALL
~~APS ATM 7.1.1~~	~~Differentiate between ACAS advisory thresholds and separation standards applicable in the approach control environment.~~	~~2~~	~~ICAO Doc 9863~~ ~~*Optional content: EUROCONTROL TCAS web page*~~	~~APP APS~~
APS ATM 7.1.2	Describe the controller responsibility during and following an ACAS RA reported by a pilot.	2	~~ICAO Doc 4444~~ Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, ICAO Doc 9863, Skybrary Safety Nets*	ALL
APS ATM 7.1.3	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS~~, TAWS~~ *Optional content: ~~EUROCONTROL ACAS web page~~ TAWS, Skybrary Safety Nets*	~~ALL~~ APP APS ACP ACS
Subtopic ATM 7.2 — Ground-based safety nets				
APS ATM 7.2.1	Describe the controller responsibility during and following safety net warnings.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, STCA, MSAW, APW, APM*	APS ACS
APS ATM 7.2.2	Respond to ground-based safety net warnings.	3	*Optional content: STCA, MSAW, APW, APM*	APS ACS

TOPIC ATM 8 — DATA DISPLAY				
Subtopic ATM 8.1 — Data management				
APS ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip-marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
APS ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
APS ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
APS ATM 8.1.4	Obtain flight plan information.	3	CPL, ~~FPL,~~ supplementary information *Optional content: FPL, ~~RPL,~~ AFIL, etc.*	ALL
APS ATM 8.1.5	Use flight plan information.	3		ALL

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TOPIC ATM 9 — OPERATIONAL ENVIRONMENT (SIMULATED)				
Subtopic ATM 9.1 — Integrity of the operational environment				
APS ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: local/simulator operation manuals, briefing, notices, ~~local orders,~~ current flight plan data/information displays, pilot reports, coordination, verification of information*	ALL
APS ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS
Subtopic ATM 9.2 — Verification of the currency of operational procedures				
APS ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, letters of agreement (LoAs), NOTAMs, AICs*	ALL
APS ATM 9.2.2	Manage traffic in accordance with a change to operational procedures.	4		APP ACP APS ACS
Subtopic ATM 9.3 — Handover–takeover				
APS ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
APS ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
APS ATM 9.3.3	List possible actions to provide a safe position handover–takeover.	1	*Optional content: rigour, preparation, overlap time*	ALL
APS ATM 9.3.4	Explain the consequences of a missed position handover–takeover process.	2		ALL

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
Subtopic ATM 10.1 — Responsibility for the provision of control service and the processing of information				
APS ATM 10.1.1	Describe the division of responsibility among air traffic control units.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	*ALL*
APS ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
APS ATM 10.1.3	Describe the responsibility in regard to unmanned free balloons.	2	Regulation (EU) No 923/2012	~~APP ACP APS ACS~~ *ALL*

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
~~APS ATM 10.1.4~~	~~Obtain operational information.~~	~~3~~	~~ICAO Doc 4444, local operation manuals~~	~~APP ACP APS ACS~~
APS ATM 10.1.5~~4~~	Interpret operational information.	5		APP ACP APS ACS
APS ATM 10.1.6~~5~~	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
APS ATM 10.1.7~~6~~	Integrate operational information into control decisions.	4		APP ACP APS ACS
APS ATM 10.1.8~~7~~	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*
Subtopic ATM 10.2 — ATS surveillance service				
APS ATM 10.2.1	Explain the responsibility for the provision of ATS surveillance service appropriate to APS rating.	2	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 ~~ICAO Annex 11, local operation manuals~~ *Optional content: local/simulator operation manuals*	APS
APS ATM 10.2.2	Explain the functions that may be performed with the use of ATS surveillance system derived information presented on a situation display.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	APS ACS
APS ATM 10.2.3	Provide planning, coordination and control actions appropriate to VFR, SVFR and IFR traffic in VMC and IMC.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 11,~~ Regulation (EU) 2017/373, ICAO Doc 4444	APS *APP ~~ACP~~ ~~ACS~~*
APS ATM 10.2.4	Apply the procedures for termination of ATS surveillance service.	3	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, transfer of control, termination or interruption of ATS surveillance service*	APS ACS
Subtopic ATM 10.3 — Traffic management process				
APS ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, scanning, traffic projection	APS ACS
APS ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		*ALL*

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TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
APS ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
APS ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		~~APP ACP APS ACS~~ *ALL*
APS ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
APS ATM 10.3.6	Ensure ~~an~~ the adequate prioritisation~~y~~ of actions.	4		*ALL*
APS ATM 10.3.7	Execute the selected plan in a timely manner.	3		~~APP ACP APS ACS~~ *ALL*
APS ATM 10.3.8	Ensure that a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow-up	*ALL*
Subtopic ATM 10.4 — Handling traffic				
APS ATM 10.4.1	Manage arrivals, departures and overflights.	4	*Optional content: simulator operation procedures*	APP ACP APS ACS
APS ATM 10.4.2	Balance the workload against personal capacity.	5	*Optional content: rerouting, replanning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS
APS ATM 10.4.3	Define flight path monitoring and vectoring.	1	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	APS ACS
APS ATM 10.4.4	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444, Regulation (EU) 2017/373	APS ACS
APS ATM 10.4.5	Provide vectoring.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: separation, expediting arrivals, departures and/or climb to cruising levels, aircraft leaving the hold, navigation assistance, uncontrolled airspace, etc.*	APS ACS

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
APS ATM 10.4.6	Apply the procedures for termination of vectoring.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373	APS ACS
APS ATM 10.4.7	Manage traffic on different types of approaches.	4	Precision, non-precision, visual	*APP* APS
APS ATM 10.4.8	Initiate missed approach.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ~~https://www.s~~Skybrary ~~aero~~*	*APP* APS
APS ATM 10.4.9	Integrate aircraft on missed approach into the traffic situation.	4		*APP* APS
Subtopic ATM 10.5 — Control service with advanced system support				
APS ATM 10.5.1	Appreciate the impact of advanced systems on the provision of approach control service.	3	*Optional content: sequencing systems, arrival management, departure management, automated holding lists, vertical traffic displays, conflict detection and decision-making tools, automated information and coordination tools*	APS

TOPIC ATM 11 — HOLDING				
Subtopic ATM 11.1 — ~~General h~~Holding procedures				
APS ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, Regulation (EU) No 923/2012, Regulation (EU) 2017/373, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
APS ATM 11.1.2	Appreciate the factors affecting holding patterns.	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
Subtopic ATM 11.2 — Approaching aircraft				
APS ATM 11.2.1	Issue Expected Approach Times (EATs).	3		APP APS
APS ATM 11.2.2	Organise the traffic landing sequence in a holding pattern.	4	*Optional content: company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management*	APP APS
Subtopic ATM 11.3 — Holding in a surveillance environment				
APS ATM 11.3.1	Organise traffic to separate other aircraft from holding aircraft.	4		APS ACS
APS ATM 11.3.2	Integrate system support, when available.	4	*Optional content: arrival management system, automated holding lists, vertical traffic displays*	APS ACS

TOPIC ATM 12 — IDENTIFICATION				
Subtopic ATM 12.1 — Establishment of identification				
APS ATM 12.1.1	Appreciate the precautions when establishing identification.	3		APS ACS
APS ATM 12.1.2	Identify aircraft.	3	*Optional content: PSR, SSR or ADS identification method*	APS ACS
APS ATM 12.1.3	Apply the procedures for~~in the case of~~ misidentification.	3	ICAO Doc 4444, Regulation (EU) 2017/373 *Optional content: local/simulator operation manuals*	APS ACS
Subtopic ATM 12.2 — Maintenance of identification				
APS ATM 12.2.1	Appreciate the necessity to maintain identification.	3		APS ACS
Subtopic ATM 12.3 — Loss of identity				
APS ATM 12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	*Optional content: out of ATS surveillance system coverage, failure of ATS surveillance system, weather clutter, other clutter, garbling, holding, etc.*	APS ACS
APS ATM 12.3.2	Apply methods to re-establish identification.	3		APS ACS
APS ATM 12.3.3	Respond to loss/doubt concerning identification.	3	*Optional content: procedural separation*	APS ACS
Subtopic ATM 12.4 — Position information				
APS ATM 12.4.1	Appreciate the circumstances when position information should be passed on to aircraft.	3		APS ACS
APS ATM 12.4.2	State the format in which position information can be passed on to aircraft.	1	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	APS ACS
Subtopic ATM 12.5 — Transfer of identity				
APS ATM 12.5.1	Apply ~~the~~ methods of transfer of identification.	3		APS ACS
APS ATM 12.5.2	Appreciate the precautions when transferring identification.	3		APS ACS

SUBJECT 4: METEOROLOGY

~~The subject objective is:~~
~~Learners shall acquire, decode and make proper use of meteorological information relevant to the provision of ATS.~~

TOPIC MET 1 — METEOROLOGICAL PHENOMENA				
Subtopic MET 1.1 — Meteorological phenomena				
APS MET 1.1.1	Appreciate the impact of adverse weather on aircraft.	3	Thunderstorms, icing, clear-air turbulence (CAT), turbulence, microburst, wind shear, severe mountain waves, squall lines, volcanic ash	APP APS
APS MET 1.1.2	Integrate data about meteorological phenomena into the provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena*	*ALL*
APS MET 1.1.3	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS

TOPIC MET 2 — SOURCES OF METEOROLOGICAL DATA				
Subtopic MET 2.1 — Sources of meteorological information				
APS MET 2.1.1	Obtain meteorological information.	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/special AIREP*	APP ACP APS ACS
APS MET 2.1.2	Decode information from meteorological data displays.	3		*ALL*
APS MET 2.1.~~2~~3	Relay meteorological information.	3	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: flight information centre, adjacent ATS unit*	*ALL*

SUBJECT 5: NAVIGATION

~~The subject objective is:~~

~~Learners shall analyse all navigational aspects in order to organise the traffic.~~

TOPIC NAV 1 — MAPS AND AERONAUTICAL CHARTS				
Subtopic NAV 1.1 — Maps and charts				
APS NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Instrument approach charts, SID & STAR charts, aerodrome charts *Optional content: visual approach charts, military maps and charts*	ADC~~I~~ APP APS
APS NAV 1.1.2	Use relevant maps and charts.	3		~~APP~~ ~~*ACP*~~ ~~APS~~ ~~*ACS*~~ *ALL*
TOPIC NAV 2 — INSTRUMENT NAVIGATION				
Subtopic NAV 2.1 — Navigational systems				
APS NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, availability and status of ground-based and satellite-based systems*	APP ACP APS ACS
APS NAV 2.1.2	Appreciate the effect of a change in the operational status of navigational systems.	3	*Optional content: precision, limitations, status, degraded procedures*	*ALL*
Subtopic NAV 2.2 — Stabilised approach				
APS NAV 2.2.1	Describe the concept of stabilised approach.	2	*Optional content: ~~https://www.s~~Skybrary~~.aero~~*	~~ADV~~ ADC~~I~~ APP APS
APS NAV 2.2.2	Appreciate the effect of late change of runway-in-use or type of approach for landing aircraft.	3	Cockpit workload *Optional content: impact on vertical profile (CDO), FMS management, crew procedure briefing, missed approach, loss of situational awareness, etc.*	APP APS
APS NAV 2.2.3	Appreciate controller actions that may contribute to an unstabilised approach.	3	Inappropriate speed control, vectoring for short final, vectoring for approach with significant tailwind, glide path interception from above, lack of or incorrect distance to touchdown information, delayed descent, incorrect use of 'DIRECT TO'	APS
Subtopic NAV 2.3 — Instrument departures and arrivals				
APS NAV 2.3.1	Describe relevant SIDs and STARs.	2		~~ADI~~ APP APS
APS NAV 2.3.2	Describe the types and phases of instrument approach procedures.	2	Regulation (EU) 2017/373, ICAO Annex 6	ADC APP APS

TOPIC NAV 2 — INSTRUMENT NAVIGATION				
APS NAV 2.3.3	Describe the relevant minima applicable for a precision/non-precision and visual approach.	2	*Optional content: Type A/B operations, CAT I/II/III criteria, LNAV, LNAV/VNAV, LPV, RNP AR APCH minima*	ADC~~I~~ APP APS
Subtopic NAV 2.4 — Navigational assistance				
APS NAV 2.4.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	APP *ACP* APS *ACS*
APS NAV 2.4.2	Assist pilots with navigation when required.	3	Aircraft observed to be deviating from their known intended route, on pilots' request	APS *ACS*
Subtopic NAV 2.5 — Satellite-based systems				
APS NAV 2.5.1	State the different applications of satellite-based systems relevant for approach operations.	1	RNP APCH, RNP AR APCH, SBAS, GBAS *Optional content: LNAV, LNAV/VNAV LPV, RNP minima, precision approach*	APP APS
Subtopic NAV 2.6 — PBN applications				
APS NAV 2.6.1	State the navigation applications used in approach and terminal environments.	1	Approach-RNP APCH / RNP AR APCH, Terminal-RNAV-1 RNP 1 with RF, rotorcraft option RNP 0.3 *Optional content: ICAO Doc 9613, Regulation (EU) No 716/2014[41], Regulation (EU) 2018/1048[42]*	APP APS
APS NAV 2.6.2	Explain the principles and designation of navigation specifications in use.	2	Performance, functionalities, sensors *Optional content: aircrew and controller requirements, accuracy requirements, integrity and continuity*	APP *ACP* APS *ACS*
APS NAV 2.6.3	Describe the differences in turn performance.	2	*Optional content: fly-by, fly-over, RF, ICAO Doc 4444*	APP APS
APS NAV 2.6.~~3~~4	State future PBN developments.	1	A-RNP, RNP (AR) DEP *Optional content: RNP 3D, VNAV, RNP 4D, TBO*	*ALL* ~~*ADI APP ACP APS ACS*~~

[41] Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan (OJ L 190, 28.6.2014, p. 19).

[42] Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning performance-based navigation (OJ L 189, 26.7.2018, p. 3).

SUBJECT 6: AIRCRAFT

~~The subject objective is:~~

~~Learners shall assess and integrate aircraft performance in the provision of ATS.~~

TOPIC ACFT 1 — AIRCRAFT INSTRUMENTS				
Subtopic ACFT 1.1 — Aircraft instruments				
APS ACFT 1.1.1	Integrate information from aircraft instruments provided by the pilot into the provision of ATS.	4		ALL
APS ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios*	ALL
APS ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability	ADC~~I~~ APS ACS

TOPIC ACFT 2 — AIRCRAFT CATEGORIES				
Subtopic ACFT 2.1 — Wake turbulence				
APS ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to succeeding aircraft.	2		ALL
APS ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence to succeeding aircraft.	3		ALL
Subtopic ACFT 2.2 — Application of the ICAO approach categories				
APS ACFT 2.2.1	Describe the use of the ICAO approach categories.	2	ICAO Doc 8168	ADC~~I~~ APP APS
APS ACFT 2.2.2	Appreciate the effect of the ICAO approach categories on the traffic organisation ~~of traffic~~.	3		ADC~~I~~ APP APS

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.1 — Climb factors				
APS ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
APS ACFT 3.1.2	Describe the influence of factors affecting departing aircraft.	3	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	APP APS
Subtopic ACFT 3.2 — Cruise factors				
APS ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	*Optional content: level, cruising speed, wind, mass, cabin pressurisation*	APP APS

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.3 — Descent and initial approach factors				
APS ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, aircraft configuration, cabin pressurisation*	APP APS
Subtopic ACFT 3.4 — Final approach and landing factors				
APS ACFT 3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, meteorological conditions, runway conditions, runway slope, aerodrome elevation*	APP APS
Subtopic ACFT 3.5 — Economic factors				
APS ACFT 3.5.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile*	APP APS
APS ACFT 3.5.2	Provide continuous climb/descent whenever possible.	4		APS *ACS*
APS ACFT 3.5.3	Use direct routing where applicable.	3		APS APP *ACP* *ACS*
APS ACFT 3.5.4	Appreciate controller's actions that may contribute to pilot's ability to fly an optimum continuous descent.	3	*Optional content: level instructions, speed control, vertical speed control, vectoring, distance-to-touchdown information*	APS *ACS*
Subtopic ACFT 3.6 — Environmental factors				
APS ACFT 3.6.1	Appreciate the performance restrictions due to environmental considerations.	3	*Optional content: fuel-dumping, noise-abatement procedures, minimum flight levels, bird strike hazard, continuous descent operations*	APP APS

TOPIC ACFT 4 — AIRCRAFT DATA				
Subtopic ACFT 4.1 — Performance data				
APS ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/-working environment into the provision of control service.	4	Performance data under a representative variety of circumstances	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ *ALL*

SUBJECT 7: HUMAN FACTORS

~~The subject objective is:~~

~~Learners shall recognise the necessity to constantly extend their knowledge and analyse factors which affect personal and team performance.~~

TOPIC HUM 1 — INFORMATION PROCESSING ~~PSYCHOLOGICAL FACTORS~~				
Subtopic HUM 1.1 — Cognition~~ve~~ and factors influencing it				
APS HUM 1.1.1	Describe the human information-processing model.	2	Attention, perception, memory, situational awareness, decision-making, response	ALL
APS HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
Subtopic HUM 1.2 — Situational awareness				
APS HUM 1.2.1	Appreciate the effect of human information-processing factors on situational awareness.	3	*Optional content: workload, knowledge, interpersonal relations, distraction, confidence, experience, fatigue, stress*	ALL
Subtopic HUM 1.3 — Decision-making				
APS HUM ~~1.1.3~~ 1.3.1	Appreciate ~~Monitor~~ the effect of human information-processing factors on decision-making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
Subtopic HUM 2.1 — Fatigue				
~~APS HUM 2.1.1~~	~~State factors that cause fatigue.~~	~~1~~	~~Shift work~~ ~~*Optional content: night shifts and rosters, Regulation (EU) 2017/373*[43]~~, ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	~~ALL~~
APS HUM 2.1.~~2~~1	Describe the onset of fatigue.	2	Regulation (EU) 2017/373 *Optional content: lack of concentration, listlessness, irritability, frustration, Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management* ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	ALL
APS HUM 2.1.~~3~~2	Recognise the onset of fatigue in self and in others.	1	*Optional content:* ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~ *Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL

[43] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).

TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
~~APS HUM 2.1.4~~	~~Recognise the onset of fatigue in others.~~	~~1~~		~~ALL~~
APS HUM 2.1.~~5~~3	Describe the appropriate action when recognising fatigue.	2	*Optional content: Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL
~~**Subtopic HUM 2.2 — Fitness**~~				
~~APS HUM 2.2.1~~	~~Recognise signs of lack of personal fitness.~~	~~1~~		~~ALL~~
~~APS HUM 2.2.2~~	~~Describe actions when aware of a lack of personal fitness.~~	~~2~~		~~ALL~~
Subtopic HUM 2.2 — Stress				
APS HUM 2.2.1	Recognise the effects of stress on human performance.	1	Stress and its symptoms in self and in others *Optional content: Regulation (EU) 2017/373*	ALL
APS HUM 2.2.2	Describe the appropriate action when recognising stress.	2		ALL
APS HUM 2.2.3	Act to reduce stress.	3		ALL
APS HUM 2.2.4	Respond to a stressful situation by offering, asking for or accepting assistance.	3		ALL
APS HUM 2.2.5	Recognise the effect of stressful events.	1	Self and others, abnormal situations	ALL
TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
Subtopic HUM 3.1 — Threat and error management framework				
APS HUM 3.1.1	Explain the importance of threat and error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*	ALL
APS HUM 3.1.2	Explain the threat and error management framework.	2	Threats, errors, undesired states, countermeasures *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 3.1.3	Differentiate between the different types of threats in ATC.	2	Internal, external, airborne, environmental *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
APS HUM 3.1.4	Differentiate between the different types of errors in ATC.	2	Equipment, procedural, communication *Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
APS HUM 3.1.5	Differentiate between the different types of undesired states.	2	On the ground, airborne *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 3.1.6	Analyse examples of threat and error management in ATC.	4	Case studies *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
Subtopic HUM 3.2 — Application of threat and error management				
APS HUM 3.2.1	Manage threats.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 3.2.2	Manage errors.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 3.2.3	Manage undesired states.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~Subtopic HUM 3.1 — Team resource management (TRM)~~				
~~APS HUM 3.1.1~~	~~State the relevance of TRM.~~	~~1~~	~~*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*~~	~~ALL~~
~~APS HUM 3.1.2~~	~~State the content of the TRM concept.~~	~~1~~	~~*Optional content: teamwork, human error, team roles, stress, decision-making, communication, situational awareness*~~	~~ALL~~
~~Subtopic HUM 3.2 — Teamwork and team roles~~				
~~APS HUM 3.2.1~~	~~Identify reasons for conflict.~~	~~3~~		~~ALL~~
~~APS HUM 3.2.2~~	~~Describe actions to prevent human conflicts.~~	~~2~~	~~*Optional content: TRM team roles*~~	~~ALL~~
~~APS HUM 3.2.3~~	~~Describe strategies to cope with human conflicts.~~	~~2~~	~~*Optional content: in your team, in the simulator*~~	~~ALL~~
~~Subtopic HUM 3.3 — Responsible behaviour~~				

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~APS HUM 3.3.1~~	~~Consider the factors which influence responsible behaviour.~~	~~2~~	~~*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*~~	~~ALL~~
~~APS HUM 3.3.2~~	~~Apply responsible judgement.~~	~~3~~	~~Case study and discussion about a dilemma situation~~	~~ALL~~
TOPIC HUM 4 — TEAMWORK ~~STRESS~~				
Subtopic HUM 4.1 — Benefits of teamwork ~~Stress~~				
~~APS HUM 4.1.1~~	~~Recognise the effects of stress on performance.~~	~~1~~	~~Stress and its symptoms in self and in others~~ ~~*Optional content: Regulation (EU) 2017/373*~~	~~ALL~~
APS HUM 4.1.1	State the benefits of teamwork.	1	Increased safety, efficiency and capacity	ALL
APS HUM 4.1.2	List the controller's human performance elements affected by teamwork.	1	Situational awareness, communication, decision-making, threat and error management, workload management	ALL
Subtopic HUM 4.2 — Conflict ~~Stress~~ management				
APS HUM 4.2.1	Identify the reasons for conflict.	3		ALL
APS HUM 4.2.2	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
APS HUM 4.2.3	Describe actions to prevent human conflicts.	2		ALL
~~APS HUM 4.2.1~~	~~Act to reduce stress.~~	~~3~~	~~The effect of personality in coping with stress, the benefits of active stress management~~	~~ALL~~
~~APS HUM 4.2.2~~	~~Respond to stressful situations by offering, asking or accepting assistance.~~	~~3~~	~~*Optional content: the benefits of offering, accepting and asking for help in stressful situations*~~	~~ALL~~
~~APS HUM 4.2.3~~	~~Recognise the effect of shocking and stressful events.~~	~~1~~	~~Self and others, abnormal situations, Critical Incident Stress Management (CISM)~~	~~ALL~~
~~APS HUM 4.2.4~~	~~Consider the benefits of Critical Incident Stress Management (CISM).~~	~~2~~		~~ALL~~
~~APS HUM 4.2.5~~	~~Explain procedures to be used following an incident/accident.~~	~~2~~	~~*Optional content: CISM, counselling, human element*~~	~~ALL~~

TOPIC HUM 5 — SYSTEMS				
Subtopic HUM 5.1 — Concept of systems in ATM/ANS				
APS HUM 5.1.1	Explain the concept of systems.	2	People; procedures; equipment; ATM in systems terms: simple, complicated, and complex systems; system thinking	ALL
APS HUM 5.1.2	Describe how changes in one part of a system may impact the other parts.	2		ALL
APS HUM 5.1.3	Describe the role of the human in the system.	2		ALL

~~**TOPIC HUM 5 — HUMAN ERROR**~~				
~~**Subtopic HUM 5.1 — Human error**~~				
~~APS HUM 5.1.1~~	~~Explain the relationship between error and safety.~~	~~2~~	~~Number and combination of errors, proactive versus reactive approach to discovery of error~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APS HUM 5.1.2~~	~~Differentiate between the types of error.~~	~~2~~	~~Slips, lapses, mistakes~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APS HUM 5.1.3~~	~~Describe error-prone conditions.~~	~~2~~	~~*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*~~	~~ALL~~
~~APS HUM 5.1.4~~	~~Collect examples of different error types, their causes and consequences for ATC.~~	~~3~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APS HUM 5.1.5~~	~~Explain how to detect errors to compensate for them.~~	~~2~~	~~STCA, MSAW, individual and collective strategy~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APS HUM 5.1.6~~	~~Execute corrective actions.~~	~~3~~	~~Error compensation~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~APS HUM 5.1.7~~	~~Explain the importance of error management.~~	~~2~~	~~*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*~~	~~ALL~~
~~APS HUM 5.1.8~~	~~Describe the impact on an ATCO's performance following an occurrence/incident.~~	~~2~~	~~*Optional content: reporting, SMS, investigation, CISM*~~	~~ALL~~
~~**Subtopic HUM 5.2 — Violation of rules**~~				

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~APS HUM 5.2.1~~	~~Explain the causes and dangers of violation of rules becoming accepted as a practice.~~	~~2~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
Subtopic HUM 6.1 — Effective ~~C~~communication				
APS HUM 6.1.1	Explain effective communication in ATC operations.	2	ICAO Doc 9868	ALL
~~APS HUM 6.1.1~~	~~Use communication effectively in ATC.~~	~~3~~		~~ALL~~
APS HUM 6.1.2	Explain key strategies used to enable open communication.	2	*Optional content: active listening, active speaking, assertiveness, honesty, relevance, facts, neutrality*	ALL
~~APS HUM 6.1.2~~	~~Analyse examples of pilot–controller communication for effectiveness.~~	~~4~~		~~ALL~~
APS HUM 6.1.3	Describe the parameters affecting the controller's competence to communicate effectively.	2	Workload, mutual knowledge, controller versus pilot mental picture, distractions, sound, human conflicts *Optional content: communication between and within the team(s), in the simulator, with the pilots, instructors, coordination partners workload*	ALL
Subtopic HUM 6.2 — Effective feedback				
APS HUM 6.2.1	Define feedback.	1		ALL
APS HUM 6.2.2	Explain the purpose of receiving and giving feedback, and its effect on performance.	2		ALL
APS HUM 6.2.3	Consider the impact of communication styles on feedback and on conflict resolution.	2		ALL
APS HUM 6.2.4	Integrate feedback into performance.	4		ALL
~~Subtopic HUM 6.2 — Collaborative work within the same area of responsibility~~				
~~APS HUM 6.2.1~~	~~List communication means between controllers in charge of the same area of responsibility (sector or tower).~~	~~1~~	~~*Optional content: electronic, written, verbal and non-verbal communication*~~	~~ALL~~
~~APS HUM 6.2.2~~	~~Explain consequences of the use of communication means on effectiveness.~~	~~2~~	~~*Optional content: strip legibility and encoding, label designation, feedback*~~	~~ALL~~
~~APS HUM 6.2.3~~	~~List possible actions to provide a safe position handover.~~	~~1~~	~~*Optional content: rigour, preparation, overlap time*~~	~~ALL~~

TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
~~APS HUM 6.2.4~~	~~Explain consequences of a missed position handover process.~~	~~2~~		~~ALL~~
~~Subtopic HUM 6.3 — Collaborative work between different areas of responsibility~~				
~~APS HUM 6.3.1~~	~~List factors and means for an effective coordination between sectors and/or tower positions.~~	~~1~~	~~*Optional content: other sectors' constraints, electronic coordination tools*~~	~~ALL~~
~~Subtopic HUM 6.4 — Controller–pilot cooperation~~				
~~APS HUM 6.4.1~~	~~Describe parameters affecting controller–pilot cooperation.~~	~~2~~	~~*Optional content: workload, mutual knowledge, controller versus pilot mental picture*~~	~~ALL~~

SUBJECT 8: EQUIPMENT AND SYSTEMS

~~The subject objective is:~~

~~Learners shall integrate knowledge and understanding of the basic working principles of equipment and systems, and comply with the equipment and system degradation procedures in the provision of ATS.~~

TOPIC EQPS 1 — VOICE COMMUNICATIONS				
Subtopic EQPS 1.1 — Radio communications				
APS EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
APS EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
APS EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
Subtopic EQPS 1.2 — Other voice communications				
APS EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL

TOPIC EQPS 2 — AUTOMATION IN ATS				
Subtopic EQPS 2.1 — Aeronautical fixed telecommunication network (AFTN)				
APS EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAMs, SNOWTAMs, BIRDTAMs, etc.*	ALL
Subtopic EQPS 2.2 — Automatic data interchange				
APS EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	~~ADV~~ ADC~~+~~ APS ACS

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
Subtopic EQPS 3.1 — Operation and monitoring of equipment				
APS EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
APS EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems, UDF/VDF*	ALL
APS EQPS 3.1.3	Operate the available equipment in abnormal and emergency situations.	3		ALL
Subtopic EQPS 3.2 — Situation displays and information systems				
APS EQPS	Use situation displays.	3		ALL

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
3.2.1				
APS EQPS 3.2.2	Check the availability of information.	3		ALL
APS EQPS 3.2.3	Obtain information from equipment.	3		APP ACP APS ACS
Subtopic EQPS 3.3 — Flight data systems				
APS EQPS 3.3.1	Use the flight data information at the controller working position.	3		ALL
Subtopic EQPS 3.4 — Use of the ATS surveillance system				
APS EQPS 3.4.1	Use the ATS surveillance system functions.	3		APS ACS
APS EQPS 3.4.2	Analyse the information provided by the ATS surveillance system.	4		APS ACS
APS EQPS 3.4.3	Assign codes.	4		APS ACS
APS EQPS 3.4.4	Appreciate the use of advanced surveillance technology.	3	*Optional content: Mode S, ADS-B, MLAT*	APS ACS
Subtopic EQPS 3.5 — Advanced systems				
APS EQPS 3.5.1	Appreciate the use of controller–pilot data link communications when available.	3		APS ACS
APS EQPS 3.5.2	Characterise ~~Appreciate~~ the use of information provided by advanced systems.	~~3~~ 2	MTCD, AMAN, DMAN *Optional content: trajectory-based information, ~~MTCD,~~ MONA, etc.*	APS ACS

TOPIC EQPS 4 — FUTURE EQUIPMENT				
Subtopic EQPS 4.1 — New developments				
APS EQPS 4.1.1	Recognise future developments.	1	New advanced systems *Optional content: European ATM Master Plan, European Plan for Aviation Safety*	ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
Subtopic EQPS 5.1 — Reaction to limitations				
APS EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
APS EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
Subtopic EQPS 5.2 — Communication equipment degradation				
APS EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground–air and landline communications*	APP ACP APS ACS
APS EQPS 5.2.2	Apply contingency procedures in the event of communication equipment degradation.	3	*Optional content: procedures for total or partial degradation of ground–air and landline communications, alternative methods of transferring data*	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL
Subtopic EQPS 5.3 — Navigational equipment degradation				
APS EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: ~~VOR,~~ navigational aids, 'European GNSS Contingency/Reversion Handbook for PBN Operations'*	ALL
APS EQPS 5.3.2	Apply contingency procedures in the event of ~~a~~ navigational equipment degradation.	3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	~~ADI~~ ~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL
Subtopic EQPS 5.4 — Surveillance equipment degradation				
APS EQPS 5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, loss of certain facilities, total failure	APS ACS
APS EQPS 5.4.2	Apply contingency procedures in the event of surveillance equipment degradation.	3	*Optional content: inform adjacent sectors, inform aircraft, apply vertical separation (emergency), increased horizontal separation, reduce the number of aircraft entering area of responsibility, transfer aircraft to another unit*	APS ACS
Subtopic EQPS 5.5 — ATC processing system degradation				
APS EQPS 5.5.1	Identify ~~a~~ processing system degradation.	3	*Optional content: FDPS, SDPS, software processing of situation display*	APS ACS
APS EQPS 5.5.2	Apply contingency procedures in the event of ~~a~~ processing system degradation.	3		APS ACS

SUBJECT 9: PROFESSIONAL ENVIRONMENT

~~The subject objective is:~~

~~Learners shall identify the need for close cooperation with other parties concerning ATM operations and appreciate aspects of environmental protection.~~

TOPIC PEN 1 — FAMILIARISATION				
Subtopic PEN 1.1 — Study visit to an approach control unit				
APS PEN 1.1.1	Appreciate the functions and provision of operational approach control service.	3	Study visit to an approach control unit	APP APS

TOPIC PEN 2 — AIRSPACE USERS				
Subtopic PEN 2.1 — Contributors to civil ATS operations				
APS PEN 2.1.1	Characterise civil ATS activities in an approach control unit.	2	Study visit to an approach control unit *Optional content: familiarisation visits to TWR, ACC, AIS, RCC*	APP APS
APS PEN 2.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to engineering services, firefighting and emergency services, airline operations offices*	ALL
Subtopic PEN 2.2 — Contributors to military ATS operations				
APS PEN 2.2.1	Characterise military ATS activities.	2	*Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, ~~A~~air ~~D~~defence ~~U~~units*	ALL

TOPIC PEN 3 — CUSTOMER RELATIONS				
Subtopic PEN 3.1 — Provision of services and user requirements				
APS PEN 3.1.1	Appreciate ~~Identify~~ the role of an air navigation ~~ATC as a~~ service provider.	3	Regulation (EU) 2018/1139[44]	ALL
APS PEN 3.1.2	Appreciate ATS users' requirements.	3		ALL

TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
Subtopic PEN 4.1 — Environmental protection				
APS PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Doc 10013 ~~Circular 303~~ — Operational opportunities to reduce ~~Minimize~~ fuel burn ~~Use~~ and ~~Reduce~~ emissions*	~~ADV~~ AD~~I~~C APP APS

[44] Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91.

TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
APS PEN 4.1.2	Explain the use of the Collaborative Environmental Management (CEM) process at aerodromes.	2	*Optional content: European ATM Master Plan, EUROCONTROL CEM Specification*	~~ADV~~ ADC~~I~~ APP APS
APS PEN 4.1.3	Appreciate the mitigation techniques used to minimise aviation's impact on the environment.	3	*Optional content: continuous descent operations (CDO), continuous climb operations (CCO), noise-abatement procedures, noise preferential routes, flight efficiency*	~~APP~~ APS

SUBJECT 10: ABNORMAL AND EMERGENCY SITUATIONS

~~The subject objective is:~~

~~Learners shall develop a professional attitude to manage traffic in abnormal and emergency situations.~~

TOPIC ABES 1 — ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 1.1 — Overview of ABES				
APS ABES 1.1.1	List common abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure, unreliable instruments, runway incursion, GNSS failure*	ALL
APS ABES 1.1.2	Identify potential or actual abnormal and emergency situations.	3		ALL
APS ABES 1.1.3	Take into account the procedures for given abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
APS ABES 1.1.4	Take into account that procedures do not exist for all abnormal and emergency situations.	2	*Optional content: real-life examples*	ALL
APS ABES 1.1.5	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.1 — Communication effectiveness				
APS ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, radio silence instruction	ALL
APS ABES 2.1.2	Apply change of radiotelephony call sign.	3	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444*	ALL
Subtopic ABES 2.2 — Avoidance of mental overload				
APS ABES 2.2.1	Describe actions to keep the situation under control.	2	*Optional content: sector-splitting, holding, flow management, task delegation*	ALL
APS ABES 2.2.2	Organise priority of actions.	4		ALL
APS ABES 2.2.3	Ensure the effective dissemination of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.*	ALL
APS ABES 2.2.4	Consider asking for help.	2		ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.3 — Air–ground cooperation				
APS ABES 2.3.1	Collect appropriate information relevant to the situation.	3		ALL
APS ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL

TOPIC ABES 3 — PROCEDURES FOR ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 3.1 — Application of procedures for ABES				
APS ABES 3.1.1	Apply the procedures for given abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure*	ALL
Subtopic ABES 3.2 — Radio failure				
APS ABES 3.2.1	Describe the procedures to be followed by a pilot when experiencing ~~that pilot experiences~~ complete or partial radio failure.	2	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, military procedures, simulator operation procedures*	ALL
APS ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	Regulation (EU) No 923/2012 *Optional content: prolonged loss of communication*	ALL
Subtopic ABES 3.3 — Unlawful interference and aircraft bomb threat				
APS ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	Regulation (EU) No 923/2012 *Optional content: simulator operation procedures*	ALL
Subtopic ABES 3.4 — Strayed or unidentified aircraft				
APS ABES 3.4.1	Apply the procedures for~~in the case of~~ strayed aircraft.	3	Regulation (EU) No 923/2012 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
APS ABES 3.4.2	Apply the procedures for~~in the case of~~ unidentified aircraft.	3	Regulation (EU) No 923/2012	ALL
Subtopic ABES 3.5 — Diversion~~s~~				
APS ABES 3.5.1	Provide navigational assistance to aircraft diverting in emergency.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS
Subtopic ABES 3.6 — Transponder failure				
APS ABES 3.6.1	Apply procedures in the event of an SSR transponder failure.	3	Regulation (EU) No 923/2012 *Optional content: total/partial failure, impact on ADS-B/Mode S capability*	APS ACS
Subtopic ABES 3.7 — Interception of civil aircraft				
APS ABES 3.7.1	Explain the procedures in the event of interception of civil aircraft.	2	Regulation (EU) No 923/2012	*ALL*

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SUBJECT 11: AERODROMES

~~The subject objective is:~~
~~Learners shall recognise and understand the design and layout of aerodromes.~~

TOPIC AGA 1 — AERODROME DATA, LAYOUT AND COORDINATION				
Subtopic AGA 1.1 — Definitions				
APS AGA 1.1.1	Define aerodrome data.	1	Regulation (EU) No 139/2014[45] *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hotspot~~hot spot~~*	~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 1.2 — Coordination				
APS AGA 1.2.1	Identify the information that has to be exchanged between Air Traffic Services (ATS) and the aerodrome authority.	3	Aerodrome conditions, fire/rescue category, condition of ground equipment and NAVAIDs, AIRAC, Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 2 — MOVEMENT AREA				
Subtopic AGA 2.1 — Movement area				
APS AGA 2.1.1	Describe the movement area.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.1.3	Identify the information on conditions of the movement area that has to be passed on to aircraft.	3	Essential information on aerodrome conditions	~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 2.2 — Manoeuvring area				
APS AGA 2.2.1	Describe the manoeuvring area.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.2.2	Describe the taxiway.	2		~~ADV~~ AD~~I~~C APP APS
APS AGA 2.2.3	Describe the daylight marking on taxiways.	2		~~ADV~~ AD~~I~~C APP APS

[45] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1).

TOPIC AGA 2 — MOVEMENT AREA				
APS AGA 2.2.4	Describe taxiway lighting.	2		~~ADV~~ ADC~~I~~ APP APS
Subtopic AGA 2.3 — Runways				
APS AGA 2.3.1	Describe the runway.	2	Runway, runway surface, runway strip, runway shoulder, runway-end safety areas, clearways, stopways	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.2	Describe the instrument runway.	2	Regulation (EU) No 139/2014	ADC~~I~~ APP APS
APS AGA 2.3.3	Describe the non-instrument runway.	2	Regulation (EU) No 139/2014	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barettes*	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.8	Explain the functions of visual landing aids.	2	*Optional content: AVASI, VASI, PAPI*	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.10	Characterise the effect of water/ice on runways.	2		~~ADV~~ ADC~~I~~ APP APS
APS AGA 2.3.11	Explain braking ~~action~~ performance and methods of reporting it.	2	~~Braking action coefficient~~	~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 2 — MOVEMENT AREA				
APS AGA 2.3.12	Explain the effect of runway visual range on aerodrome operations.	2		~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 3 — OBSTACLES				
Subtopic AGA 3.1 — Obstacle-free airspace around aerodromes				
APS AGA 3.1.1	Explain the necessity for establishing and maintaining airspace around aerodromes obstacle free~~an obstacle-free airspace around aerodromes~~.	2		~~ADV~~ ADC~~I~~ APP APS

TOPIC AGA 4 — MISCELLANEOUS EQUIPMENT				
Subtopic AGA 4.1 — Location				
APS AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	Optional content: LOC, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI	~~ADV~~ ADC~~I~~ APP APS

AMC1 ATCO.D.010(a)(2)(vi) Composition of initial training

AREA CONTROL SURVEILLANCE RATING (ACS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

(a) The general principles that apply to this AMC are contained in AMC1 ATCO.D.010(a).

(b) The ATCO ~~R~~rating training Area Control Surveillance Rating (ACS) should contain the following ~~subject objectives and~~ training objectives that are associated with the subjects, topics and subtopics contained in Appendix ~~8~~7 Area Control Surveillance Rating (ACS) to Annex I to Commission Regulation (EU) No 2015/340~~ — Area Control Surveillance Rating (ACS)~~.

(c) Subjects, topics and subtopics from Appendix ~~8~~7 to Annex I to Commission Regulation (EU) 2015/340 are repeated in this AMC for the convenience of the reader and do not form part of it.

SUBJECT 1: INTRODUCTION TO THE COURSE

~~The subject objective is:~~
~~Learners shall know and understand the training programme that they will follow and learn how to obtain the appropriate information.~~

TOPIC INTR 1 — COURSE MANAGEMENT				
Subtopic INTR 1.1 — Course introduction				
ACS INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
Subtopic INTR 1.2 — Course administration				
ACS INTR 1.2.1	State how the course is administered.	1		ALL
Subtopic INTR 1.3 — Study material and training documentation				
ACS INTR 1.3.1	Use appropriate documents and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ACS INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*	ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
Subtopic INTR 2.1 — Course content and organisation				
ACS INTR 2.1.1	State the different training methods used during the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
ACS INTR 2.1.2	State the subjects covered by the course and their purpose.	1		ALL

TOPIC INTR 2 — INTRODUCTION TO THE ATC TRAINING COURSE				
ACS INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ACS INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
Subtopic INTR 2.2 — Training ethos				
ACS INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner–instructor feedback, instructor–instructor feedback	ALL
Subtopic INTR 2.3 — Assessment process				
ACS INTR 2.3.1	Describe the assessment process.	2		ALL

SUBJECT 2: AVIATION LAW

~~The subject objective is:~~
~~Learners shall know, understand and apply the Rules of the Air and the Regulations regarding reporting and airspace, and appreciate the Licensing and Competence principles.~~

TOPIC LAW 1 — ATCO LICENSING/CERTIFICATE OF COMPETENCE				
Subtopic LAW 1.1 — Privileges and conditions				
ACS LAW 1.1.1	Appreciate the conditions which shall be met to issue an Area Control Surveillance rating.	3	Regulation (EU) 2015/340[46] ~~on ATCO Licensing~~ ~~*Optional content: national documents*~~	ACS
ACS LAW 1.1.2	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ACS LAW 1.1.3	Explain the conditions for the suspension/revocation of an ATCO licence.	2	Regulation (EU) 2015/340 ~~on ATCO Licensing~~	ALL

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.1 — Reports				
~~ACS LAW 2.1.1~~	~~List the standard forms for reports.~~	~~1~~	~~Air traffic incident report~~ ~~Optional content: routine air-reports, breach of regulations, watchbook/logbook, records~~	~~ALL~~
ACS LAW 2.1.~~2.~~1	Describe the functions of, and processes for, reporting.	2	Reporting culture, forms for mandatory and voluntary occurrence reporting ~~air traffic incident report,~~ Regulation (EU) No 376/2014[47], Regulation (EU) 2015/1018[48] *Optional content: breach of regulations, watchbook/logbook, records, voluntary reporting*	ALL
ACS LAW 2.1.~~3~~ 2	Use forms for reporting.	3	Regulation (EU) No 376/2014, forms for mandatory and voluntary occurrence reporting ~~air traffic incident reporting form(s)~~ *Optional content: routine air-reports, breach of regulations, watchbook/logbook, records*	ALL

[46] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1).

[47] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

[48] Commission Implementing Regulation (EU) 2015/1018 of 29 June 2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council (OJ L 163, 30.6.2015, p. 1).

TOPIC LAW 2 — RULES AND REGULATIONS				
Subtopic LAW 2.2 — Airspace				
ACS LAW 2.2.1	Appreciate airspace classes and structure and their relevance to operations using the Area Control Surveillance rating.	3		ACS
ACS LAW 2.2.2	Provide planning, coordination and control actions appropriate to the classification and structure of given airspace.	4	*Optional content: Regulation (EU) No 923/2012[49], international requirements, civil requirements, military requirements, areas of responsibility, sectorisation, national requirements*	ALL
ACS LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

TOPIC LAW 3 — ATS ~~ATC~~ SAFETY MANAGEMENT				
Subtopic LAW 3.1 — Feedback process				
ACS LAW 3.1.1	State the importance of controller contribution to the feedback process.	1	*Optional content: voluntary reporting*	ALL
ACS LAW 3.1.2	Describe how reported occurrences are analysed.	2	*Optional content: Regulation (EU) No 376/2014, local procedures*	ALL
ACS LAW 3.1.3	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards' web pages*	ALL
ACS LAW 3.1.4	Appreciate the just culture ~~'Just Culture'~~ concept.	3	Benefits, prerequisites, constraints *Optional content:* *~~https://www.s~~Skybrary~~.aero~~*	ALL
Subtopic LAW 3.2 — Safety ~~i~~investigation				
ACS LAW 3.2.1	Describe the role and objectives ~~mission~~ of ~~S~~safety ~~i~~investigation in the improvement of safety.	2		ALL
~~ACS LAW 3.2.2~~	~~Define working methods of Safety Investigation.~~	~~1~~		~~ALL~~

[49] Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (OJ L 281, 13.10.2012, p. 1).

SUBJECT 3: AIR TRAFFIC MANAGEMENT

~~The subject objective is:~~
~~Learners shall manage air traffic to ensure safe, orderly and expeditious services.~~

TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.1 — Air traffic control (ATC) service				
ACS ATM 1.1.1	Appreciate own area of responsibility.	3		APP ACP APS ACS
ACS ATM 1.1.2	Provide area control service.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444,~~ Regulation (EU) 2017/373, operating procedures for the simulated/training environment ~~operation manuals~~	ACP ACS
Subtopic ATM 1.2 — Flight information service (FIS)				
ACS ATM 1.2.1	Provide FIS.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: national documents*	*ALL*
ACS ATM 1.2.2	Use an ATS surveillance system in the provision of FIS.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373, information to identified aircraft concerning: traffic, navigation *Optional content: weather*	APS ACS
ACS ATM 1.2.3	Issue appropriate information concerning the position of conflicting traffic.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373, traffic information, essential traffic information	APS ACS *APP ACP*
ACS ATM 1.2.4	Appreciate the use of ATIS in the provision of FIS.	3	Regulation (EU) No 923/2012	*ALL*
Subtopic ATM 1.3 — Alerting service (ALRS)				
ACS ATM 1.3.1	Provide ALRS.	4	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373, Regulation (EU) No 923/2012 *Optional content: national documents*	ALL
ACS ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10~~, ICAO Doc 4444~~ *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ICAO Doc 4444, national documents*	ALL
ACS ATM 1.3.3	Use an ATS surveillance system in the provision of ALRS.	3		APS ACS

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TOPIC ATM 1 — PROVISION OF SERVICES				
Subtopic ATM 1.4 — ATS system capacity and air traffic flow management				
ACS ATM 1.4.1	Appreciate the impact of the ATS system capacity and air traffic flow management on the controller.	3	*Optional content: EUROCONTROL ATFCM Users Manual, FABs, FUA, free route airspace, local implementation of ATFCM principles, etc.*	APP ACP APS ACS
ACS ATM 1.4.2	Apply flow management procedures in the provision of ATC.	3	*Optional content: EUROCONTROL ATFCM Users Manual*	~~APP~~ ACP ~~APS~~ ACS
ACS ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
ACS ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
ACS ATM 1.4.5	Inform the supervisor of local factors affecting the ATS system capacity and air traffic flow management.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
ACS ATM 1.4.6	Organise traffic flows and patterns to take account of the ATS surveillance system capability.	4		APS ACS
Subtopic ATM 1.5 — Airspace management (ASM)				
ACS ATM 1.5.1	Appreciate the impact of ASM on the controller.	3	*Optional content: FABs, EUROCONTROL Specification for the application of FUA, TSAs, CDRs, CBAs, free route airspace*	APP ACP APS ACS
ACS ATM 1.5.2	Organise traffic to take account of ASM.	4	Real-time activation, deactivation or reallocation of airspace *Optional content: CDR, TSA, TRA, CBA*	APS ACS

TOPIC ATM 2 — COMMUNICATION				
Subtopic ATM 2.1 — Effective communication				
ACS ATM 2.1.1	List the means of communication between controllers.	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ACS ATM 2.1.2	Select the most suitable means of communication given the situation.	5		ALL

TOPIC ATM 2 — COMMUNICATION				
ACS ATM 2.1.~~1~~3	Use approved phraseology.	3	Regulation (EU) No 923/2012 *Optional content: published national/local language phraseology*	ALL
ACS ATM 2.1.~~2~~4	Ensure effective communication.	4	Use of plain language when required, communication within the sector/working position, between the sectors/WPs/ATC units ~~Communication techniques~~, readback/verification of readback	ALL
ACS ATM 2.1.5	Analyse examples of pilot–controller communication for effectiveness.	4	*Optional content: real-life recordings, situation in the simulator*	ALL

TOPIC ATM 3 — ATC CLEARANCES AND ATC INSTRUCTIONS				
Subtopic ATM 3.1 — ATC clearances				
ACS ATM 3.1.1	Issue appropriate ATC clearances.	3	Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
ACS ATM 3.1.2	Integrate appropriate ATC clearances into the control service.	4		ALL
ACS ATM 3.1.3	Ensure that the agreed course of action is carried out.	4		ALL
Subtopic ATM 3.2 — ATC instructions				
ACS ATM 3.2.1	Issue appropriate ATC instructions.	3	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, national documents*	ALL
ACS ATM 3.2.2	Integrate appropriate ATC instructions into the control service.	4		ALL
ACS ATM 3.2.3	Ensure that the agreed course of action is carried out.	4		ALL

TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.1 — Necessity for coordination				
ACS ATM 4.1.1	Identify the need for coordination.	3		ALL
Subtopic ATM 4.2 — Tools and methods for coordination				
ACS ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL

TOPIC ATM 4 — COORDINATION				
Subtopic ATM 4.3 — Coordination procedures				
ACS ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air–ground communications and separation, transfer of control, etc., ~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: release point*	ALL
ACS ATM 4.3.2	Analyse the effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air–ground communications and separation, release point, transfer of control, etc.*	ALL
ACS ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5		ALL
ACS ATM 4.3.4	Ensure that the agreed course of action is carried out.	4		ALL
ACS ATM 4.3.5	Coordinate when providing FIS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL
ACS ATM 4.3.6	Coordinate when providing ALRS.	4	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444*	ALL

TOPIC ATM 5 — ALTIMETRY AND LEVEL ALLOCATION				
Subtopic ATM 5.1 — Altimetry				
ACS ATM 5.1.1	Allocate levels according to altimetry data.	4	Regulation (EU) No 923/2012	ALL
ACS ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
Subtopic ATM 5.2 — Terrain clearance				
ACS ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum ~~safe~~ usable levels and terrain clearance.	4	*Optional content: minimum vectoring altitude, terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APS ACS

TOPIC ATM 6 — SEPARATION~~S~~				
Subtopic ATM 6.1 — Vertical separation				
ACS ATM 6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012, level allocation, during climb/descent, rate of climb/descent, RVSM, non-RVSM aircraft, holding pattern	ACP ACS

TOPIC ATM 6 — SEPARATION~~S~~				
ACS ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: level allocation, during climb/descent, rate of climb/descent, degraded aircraft performance, non-RVSM aircraft, reported severe turbulence*	APP ACP APS ACS
ACS ATM 6.1.3	Appreciate the application of emergency vertical separation.	3	Regulation (EU) No 923/2012, ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
ACS ATM 6.1.4	Provide vertical separation in a surveillance environment.	4	Pressure altitude-derived information, pilot-level reports *Optional content: into/out of ATS surveillance system coverage*	APS ACS
Subtopic ATM 6.2 — Longitudinal separation in a surveillance environment				
ACS ATM 6.2.1	Provide longitudinal separation in a surveillance environment.	4	Successive departures, successive arrivals, overflights, speed control, Mach number techniques, silent transfer, ICAO Doc 4444	ACS
Subtopic ATM 6.3 — Wake turbulence distance-based separation				
ACS ATM 6.3.1	Provide distance-based wake turbulence separation.	4	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~, Regulation (EU) No 923/2012 *Optional content: EASA SIB 2017-10 'En-route Wake Turbulence Encounters', national documents*	*APS* ACS
Subtopic ATM 6.4 — Separation based on ATS surveillance systems				
ACS ATM 6.4.1	Describe how separation based on ATS surveillance systems is applied.	2	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~	*APS* ACS
ACS ATM 6.4.2	Provide horizontal separation.	4	Regulation (EU) 2017/373 ~~ICAO Doc 4444, ICAO Doc 7030, local operation manuals, holding~~ *Optional content: local/simulator operation manuals, holding*	*APS* ACS
ACS ATM 6.4.3	Provide horizontal separation by vectoring in a variety of situations.	4	*Optional content: transit, meteorological phenomena, vectoring for approach, departure versus transit versus arrival*	*APS* ACS
ACS ATM 6.4.4	Ensure horizontal or vertical separation from airspace boundaries.	4	Adjacent sectors, restricted, prohibited and danger areas, TSAs.	*APS* ACS

TOPIC ATM 7 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS				
Subtopic ATM 7.1 — Airborne safety nets ~~collision avoidance systems~~				
ACS ATM 7.1.1	Recognise the independence of ~~Differentiate between~~ ACAS ~~advisory~~ thresholds ~~and~~ from ATC separation standards ~~applicable in the area control environment~~.	~~2~~ 1	ICAO Doc 9863 *Optional content: Skybrary Safety Nets ~~EUROCONTROL TCAS web page~~*	~~ACP ACS~~ ALL

TOPIC ATM 7 — AIRBORNE ~~COLLISION AVOIDANCE SYSTEMS~~ AND GROUND-BASED SAFETY NETS				
ACS ATM 7.1.2	Describe the controller responsibility during and following an ACAS RA reported by a pilot.	2	~~ICAO Doc 4444~~ Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, ICAO Doc 9863, Skybrary Safety Nets*	ALL
ACS ATM 7.1.3	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS~~, TAWS~~ *Optional content: ~~EUROCONTROL ACAS web page~~ TAWS, Skybrary Safety Nets*	APP APS ACP ACS ~~ALL~~
Subtopic ATM 7.2 — Ground-based safety nets				
ACS ATM 7.2.1	Describe the controller responsibility during and following safety net warnings.	2	Regulation (EU) 2017/373 ~~ICAO Doc 4444~~ *Optional content: ICAO Doc 4444, STCA, MSAW, APW, APM*	APS ACS
ACS ATM 7.2.2	Respond to ground-based safety net warnings.	3	*Optional content: STCA, MSAW, APW, APM*	APS ACS
TOPIC ATM 8 — DATA DISPLAY				
Subtopic ATM 8.1 — Data management				
ACS ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip-marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
ACS ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
ACS ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
ACS ATM 8.1.4	Obtain flight plan information.	3	CPL, ~~FPL,~~ supplementary information *Optional content: FPL, ~~RPL,~~ AFIL, etc.*	ALL
ACS ATM 8.1.5	Use flight plan information.	3		ALL
TOPIC ATM 9 — OPERATIONAL ENVIRONMENT (SIMULATED)				
Subtopic ATM 9.1 — Integrity of the operational environment				
ACS ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: local/simulator operation manuals, briefing, notices, ~~local orders,~~ current flight plan data/information displays, pilot reports, coordination, verification of information*	ALL

TOPIC ATM 9 — OPERATIONAL ENVIRONMENT (SIMULATED)				
ACS ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS
Subtopic ATM 9.2 — Verification of the currency of operational procedures				
ACS ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, letters of agreement (LoAs), NOTAMs, AICs*	ALL
ACS ATM 9.2.2	Manage traffic in accordance with a change to operational procedures.	4		APP ACP APS ACS
Subtopic ATM 9.3 — Handover–takeover				
ACS ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
ACS ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
ACS ATM 9.3.3	List possible actions to provide a safe position handover–takeover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ACS ATM 9.3.4	Explain the consequences of a missed position handover–takeover.	2		ALL

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
Subtopic ATM 10.1 — Responsibility for the provision of control service and the processing of information				
ACS ATM 10.1.1	Describe the division of responsibility among air traffic control units.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	*ALL*
ACS ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ACS ATM 10.1.3	Describe the responsibility in regard to unmanned free balloons.	2	Regulation (EU) No 923/2012	~~APP ACP APS ACS~~ *ALL*
~~ACS ATM 10.1.4~~	~~Obtain operational information.~~	~~3~~	~~ICAO Doc 4444, local operation manuals~~	~~APP ACP APS ACS~~
ACS ATM 10.1.~~5~~4	Interpret operational information.	5		APP ACP APS ACS

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
ACS ATM 10.1.~~6~~5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
ACS ATM 10.1.~~7~~6	Integrate operational information into control decisions.	4		APP ACP APS ACS
ACS ATM 10.1.~~8~~7	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	~~*ALL*~~
Subtopic ATM 10.2 — ATS surveillance service				
ACS ATM 10.2.1	Explain the responsibility for the provision of ATS surveillance service appropriate to ACS rating.	2	~~ICAO Doc 4444~~, Regulation (EU) 2017/373 ~~ICAO Annex 11,~~ Regulation (EU) No 923/2012 ~~local operation manuals~~ *Optional content: local/simulator operation manuals*	ACS
ACS ATM 10.2.2	Explain the functions that may be performed with the use of ATS surveillance system derived information presented on a situation display.	2	~~ICAO Doc 4444~~ Regulation (EU) 2017/373	APS ACS
ACS ATM 10.2.3	Provide planning, coordination and control actions appropriate to VFR and IFR traffic in VMC and IMC.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 4444	ACS ~~*APP*~~ *ACP* ~~*APS*~~
ACS ATM 10.2.4	Apply the procedures for the termination of ATS surveillance service.	3	~~ICAO Doc 4444~~ Regulation (EU) 2017/373 *Optional content: ICAO Doc 4444, transfer of control, termination or interruption of ATS surveillance service*	APS ACS
Subtopic ATM 10.3 — Traffic management process				
ACS ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, scanning, traffic projection	APS ACS
ACS ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		~~*ALL*~~
ACS ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
ACS ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		~~APP ACP APS ACS~~ ALL

TOPIC ATM 10 — PROVISION OF CONTROL SERVICE				
ACS ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
ACS ATM 10.3.6	Ensure an adequate priority of actions.	4		*ALL*
ACS ATM 10.3.7	Execute the selected plan in a timely manner.	3		~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ *ALL*
ACS ATM 10.3.8	Ensure that a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow-up	*ALL*
Subtopic ATM 10.4 — Handling traffic				
ACS ATM 10.4.1	Manage arrivals, departures and overflights.	4	*Optional content: simulator operation procedures*	APP ACP APS ACS
ACS ATM 10.4.2	Balance the workload against personal capacity.	5	*Optional content: rerouting, replanning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS
ACS ATM 10.4.3	Define flight path monitoring and vectoring.	1	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373	APS ACS
ACS ATM 10.4.4	Explain the requirements for vectoring and termination of vectoring.	2	~~ICAO Doc 4444,~~ Regulation (EU) 2017/373	APS ACS
ACS ATM 10.4.5	Provide vectoring.	4	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373 *Optional content: separation, expediting arrivals, departures and/or climb to cruising levels, aircraft leaving the hold, navigation assistance, uncontrolled airspace, etc.*	APS ACS
ACS ATM 10.4.6	Apply the procedures for the termination of vectoring.	3	~~ICAO Doc 4444,~~ Regulation (EU) No 923/2012, Regulation (EU) 2017/373	APS ACS
Subtopic ATM 10.5 — Control service with advanced system support				
ACS ATM 10.5.1	Appreciate the impact of advanced systems on the provision of area control service.	3	*Optional content: sequencing systems, automated holding lists, vertical traffic displays, conflict detection and decision-making tools, automated information and coordination tools*	ACS

TOPIC ATM 11 — HOLDING				
Subtopic ATM 11.1 — ~~General h~~Holding procedures				
ACS ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, Regulation (EU) No 923/2012, Regulation (EU) 2017/373, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
ACS ATM 11.1.2	Appreciate the factors affecting holding patterns.	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
Subtopic ATM 11.2 — Holding aircraft				
ACS ATM 11.2.1	Issue expected onward clearance times.	3		ACP ACS
Subtopic ATM 11.3 — Holding in a surveillance environment				
ACS ATM 11.3.1	Organise traffic to separate other aircraft from holding aircraft.	4		APS ACS
ACS ATM 11.3.2	Integrate system support, when available.	4	*Optional content: arrival management system, automated holding lists, vertical traffic displays*	APS ACS

TOPIC ATM 12 — IDENTIFICATION				
Subtopic ATM 12.1 — Establishment of identification				
ACS ATM 12.1.1	Appreciate the precautions when establishing identification.	3		APS ACS
ACS ATM 12.1.2	Identify aircraft.	3	*Optional content: PSR, SSR or ADS identification method*	APS ACS
ACS ATM 12.1.3	Apply the procedures for~~in the case of~~ misidentification.	3	ICAO Doc 4444, Regulation (EU) 2017/373 *Optional content: local/simulator operation manuals*	APS ACS
Subtopic ATM 12.2 — Maintenance of identification				
ACS ATM 12.2.1	Appreciate the necessity to maintain identification.	3		APS ACS
Subtopic ATM 12.3 — Loss of identity				
ACS ATM 12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	*Optional content: out of ATS surveillance system coverage, failure of ATS surveillance system, weather clutter, other clutter, garbling, holding, etc.*	APS ACS
ACS ATM 12.3.2	Apply methods to re-establish identification.	3		APS ACS

TOPIC ATM 12 — IDENTIFICATION				
ACS ATM 12.3.3	Respond to loss/doubt concerning identification.	3	*Optional content: procedural separation*	APS ACS
Subtopic ATM 12.4 — Position information				
ACS ATM 12.4.1	Appreciate the circumstances when position information should be passed on to aircraft.	3		APS ACS
ACS ATM 12.4.2	State the format in which position information can be passed on to aircraft.	1	~~ICAO Doc 4444~~Regulation (EU) 2017/373	APS ACS
Subtopic ATM 12.5 — Transfer of identity				
ACS ATM 12.5.1	Apply the methods of transfer of identification.	3		APS ACS
ACS ATM 12.5.2	Appreciate the precautions when transferring identification.	3		APS ACS

SUBJECT 4: METEOROLOGY

~~The subject objective is:~~
~~Learners shall acquire, decode and make proper use of meteorological information relevant to the provision of ATS.~~

TOPIC MET 1 — METEOROLOGICAL PHENOMENA				
Subtopic MET 1.1 — Meteorological phenomena				
ACS MET 1.1.1	Appreciate the impact of adverse weather on aircraft.	3	Thunderstorms, icing, jet streams, clear-air turbulence (CAT), turbulence, microburst, severe mountain waves, squall lines, volcanic ash *Optional content: solar radiation*	ACP ACS
ACS MET 1.1.2	Integrate data about meteorological phenomena into the provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena*	*ALL*
ACS MET 1.1.3	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS

TOPIC MET 2 — SOURCES OF METEOROLOGICAL DATA				
Subtopic MET 2.1 — Sources of meteorological information				
ACS MET 2.1.1	Obtain meteorological information.	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/special AIREP*	APP ACP APS ACS
ACS MET 2.1.2	Decode information from meteorological data displays.	3		*ALL*
ACS MET 2.1.~~2~~3	Relay meteorological information.	3	ICAO Doc 4444, Regulation (EU) No 923/2012 *Optional content: flight information centre, adjacent ATS unit*	*ALL*

SUBJECT 5: NAVIGATION

~~The subject objective is:~~
~~Learners shall analyse all navigational aspects in order to organise the traffic.~~

TOPIC NAV 1 — MAPS AND AERONAUTICAL CHARTS				
Subtopic NAV 1.1 — Maps and charts				
ACS NAV 1.1.1	Use relevant maps and charts.	3		~~*APP*~~ ~~ACP~~ ~~*APS*~~ ~~ACS~~ *ALL*
ACS NAV 1.1.2	Decode symbols and information displayed on aeronautical maps and charts.	3	En-route and area charts *Optional content: STAR charts*	ACP ACS

TOPIC NAV 2 — INSTRUMENT NAVIGATION				
Subtopic NAV 2.1 — Navigational systems				
ACS NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, availability and status of ground-based and satellite-based systems*	APP ACP APS ACS
ACS NAV 2.1.2	Appreciate the effect of a change in the operational status of navigational systems.	3	*Optional content: precision, limitations, status, degraded procedures*	*ALL*
Subtopic NAV 2.2 — Navigational assistance				
ACS NAV 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	*APP* ACP *APS* ACS
ACS NAV 2.2.2	Assist pilots with navigation when required.	3	Aircraft observed to be deviating from their known intended route, on pilots' request	*APS* ACS
Subtopic NAV 2.3 — PBN applications				
ACS NAV 2.3.1	State the navigation applications used in terminal and en-route environments.	1	Terminal-RNAV-1 ~~(=P-RNAV)~~, En-route-RNAV-5 ~~(B-RNAV)~~ *Optional content: A-RNP,* ~~*EC PBN Implementing Rule (*~~*Commission Implementing Regulation (EU) 2018/1048 (the PBN Regulation), ICAO Doc 9613*	ACP ACS
ACS NAV 2.3.2	Explain the principles and designation of navigation specifications in use.	2	Performance, functionalities, sensors *Optional content:* ~~*performance, functionality, sensors,*~~ *aircrew and controller requirements, accuracy requirements, integrity and continuity*	*APP* ACP *APS* ACS
ACS NAV 2.3.3	Describe the differences in turn performance.	2	*Optional content: fly-by, fly-over, FRT, ICAO Doc 4444*	ACP ACS

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TOPIC NAV 2 — INSTRUMENT NAVIGATION				
ACS NAV 2.3.~~3~~4	State future PBN developments.	1	A-RNP, RNP (AR) DEP *Optional content: RNP 3D, VNAV, 4D, TBO*	*ALL* ~~*ADI*~~ ~~*APP*~~ ~~*APS*~~ ~~*ACP*~~ ~~*ACS*~~

SUBJECT 6: AIRCRAFT

~~The subject objective is:~~
~~Learners shall assess and integrate aircraft performance in the provision of ATS.~~

TOPIC ACFT 1 — AIRCRAFT INSTRUMENTS				
Subtopic ACFT 1.1 — Aircraft instruments				
ACS ACFT 1.1.1	Integrate information from aircraft instruments provided by the pilot into the provision of ATS.	4		ALL
ACS ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios*	ALL
ACS ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability	AD~~+~~C APS ACS
TOPIC ACFT 2 — AIRCRAFT CATEGORIES				
Subtopic ACFT 2.1 — Wake turbulence				
ACS ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to succeeding aircraft.	2		ALL
ACS ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence to succeeding aircraft.	3		ALL
TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
Subtopic ACFT 3.1 — Climb factors				
ACS ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
Subtopic ACFT 3.2 — Cruise factors				
ACS ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	ACP ACS
Subtopic ACFT 3.3 — Descent factors				
ACS ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, cabin pressurisation*	ACP ACS
Subtopic ACFT 3.4 — Economic factors				
ACS ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile, top of descent*	ACP ACS
ACS ACFT 3.4.2	Provide continuous climb/descent whenever possible.	4		*APS* ACS
ACS ACFT	Use direct routing where applicable.	3		*APP* ACP

TOPIC ACFT 3 — FACTORS AFFECTING AIRCRAFT PERFORMANCE				
3.4.3				*APS* ACS
ACS ACFT 3.4.4	Appreciate controller's actions that may contribute to pilot's ability to fly an optimum continuous descent.	3	*Optional content: level instructions, speed control, vertical speed control, vectoring, distance-to-touchdown information*	ACS APS
Subtopic ACFT 3.5 — Environmental factors				
ACS ACFT 3.5.1	Appreciate the performance restrictions due to environmental considerations.	3	*Optional content: fuel-dumping, minimum flight levels, continuous descent operations*	ACP ACS

TOPIC ACFT 4 — AIRCRAFT DATA				
Subtopic ACFT 4.1 — Performance data				
ACS ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/-working environment into the provision of control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS

SUBJECT 7: HUMAN FACTORS

~~The subject objective is:~~
~~Learners shall recognise the necessity to constantly extend their knowledge and analyse factors which affect personal and team performance.~~

TOPIC HUM 1 — INFORMATION PROCESSING ~~PSYCHOLOGICAL FACTORS~~				
Subtopic HUM 1.1 — Cognition~~ve~~ and factors influencing it				
ACS HUM 1.1.1	Describe the human information-processing model.	2	Attention, perception, memory, situational awareness, decision-making, response	ALL
ACS HUM 1.1.2	Describe the factors which influence human information~~-~~ processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
Subtopic HUM 1.2 — Situational awareness				
ACS HUM 1.2.1	Appreciate the effect of human information-processing factors on situational awareness.	3	*Optional content: workload, knowledge, interpersonal relations, distraction, confidence, experience, fatigue, stress*	ALL
Subtopic HUM 1.3 — Decision-making				
APS HUM ~~1.1.3~~ 1.3.1	Appreciate ~~Monitor~~ the effect of human information-processing factors on decision-making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL

TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
Subtopic HUM 2.1 — Fatigue				
~~ACS HUM 2.1.1~~	~~State factors that cause fatigue.~~	~~1~~	~~Shift work~~ ~~*Optional content: night shifts and rosters, Regulation (EU) 2017/373*~~[50]~~*, ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	~~ALL~~
ACS HUM 2.1.~~2~~1	Describe the onset of fatigue.	2	Regulation (EU) 2017/373 *Optional content: lack of concentration, listlessness, irritability, frustration, Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management* ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~	ALL
ACS HUM 2.1.~~3~~2	Recognise the onset of fatigue in self and in others.	1	*Optional content:* ~~*ICAO/IFATCA/CANSO's Fatigue Management Guide for Air Traffic Service Providers*~~ *Skybrary Human Behaviour: EUROCONTROL Fatigue and sleep management*	ALL

~~[50] Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (OJ L 62, 8.3.2017, p. 1).~~

TOPIC HUM 2 — ~~MEDICAL AND PHYSIOLOGICAL~~ FACTORS AFFECTING HEALTH AND WELL-BEING				
~~ACS HUM 2.1.4~~	~~Recognise the onset of fatigue in others.~~	~~1~~		~~ALL~~
ACS HUM 2.1.~~5~~3	Describe the appropriate action when recognising fatigue.	2	*Optional content: Skybrary Human Behaviour, EUROCONTROL Fatigue and sleep management*	ALL
~~**Subtopic HUM 2.2 — Fitness**~~				
~~ACS HUM 2.2.1~~	~~Recognise signs of lack of personal fitness.~~	~~1~~		~~ALL~~
~~ACS HUM 2.2.2~~	~~Describe actions when aware of a lack of personal fitness.~~	~~2~~		~~ALL~~
Subtopic HUM 2.2 — Stress				
ACS HUM 2.2.1	Recognise the effects of stress on human performance.	1	Stress and its symptoms in self and in others *Optional content: Regulation (EU) 2017/373*	ALL
ACS HUM 2.2.2	Describe the appropriate action when recognising stress.	2		ALL
ACS HUM 2.2.3	Act to reduce stress.	3		ALL
ACS HUM 2.2.4	Respond to stressful situations by offering, asking for or accepting assistance.	3		ALL
ACS HUM 2.2.5	Recognise the effect of stressful events.	1	Self and others, abnormal situations	ALL
TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
Subtopic HUM 3.1 — Threat and error management framework				
ACS HUM 3.1.1	Explain the importance of threat and error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*	ALL
ACS HUM 3.1.2	Explain the threat and error management framework.	2	Threats, errors, undesired states, countermeasures *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 3.1.3	Differentiate between the different types of threats in ATC.	2	Internal, external, airborne, environmental *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

TOPIC HUM 3 — THREAT AND ERROR MANAGEMENT				
ACS HUM 3.1.4	Differentiate between the different types of errors in ATC.	2	Equipment, procedural, communication *Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
ACS HUM 3.1.5	Differentiate between the different types of undesired states.	2	On the ground, airborne *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 3.1.6	Analyse examples of threat and error management in ATC.	4	Case studies *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
Subtopic HUM 3.2 — Application of threat and error management				
ACS HUM 3.2.1	Manage threats.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 3.2.2	Manage errors.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 3.2.3	Manage undesired states.	4	Detect and respond *Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~Subtopic HUM 3.1 — Team resource management (TRM)~~				
~~ACS HUM 3.1.1~~	~~State the relevance of TRM.~~	~~1~~	~~*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*~~	~~ALL~~
~~ACS HUM 3.1.2~~	~~State the content of the TRM concept.~~	~~1~~	~~*Optional content: teamwork, human error, team roles, stress, decision-making, communication, situational awareness*~~	~~ALL~~
~~Subtopic HUM 3.2 — Teamwork and team roles~~				
~~ACS HUM 3.2.1~~	~~Identify reasons for conflict.~~	~~3~~		~~ALL~~
~~ACS HUM 3.2.2~~	~~Describe actions to prevent human conflicts.~~	~~2~~	~~*Optional content: TRM team roles*~~	~~ALL~~
~~ACS HUM 3.2.3~~	~~Describe strategies to cope with human conflicts.~~	~~2~~	~~*Optional content: in your team, in the simulator*~~	~~ALL~~
~~Subtopic HUM 3.3 — Responsible behaviour~~				

~~TOPIC HUM 3 — SOCIAL AND ORGANISATIONAL FACTORS~~				
~~ACS HUM 3.3.1~~	~~Consider the factors which influence responsible behaviour.~~	~~2~~	~~*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*~~	~~ALL~~
~~ACS HUM 3.3.2~~	~~Apply responsible judgement.~~	~~3~~	~~Case study and discussion about a dilemma situation~~	~~ALL~~
TOPIC HUM 4 — TEAMWORK ~~STRESS~~				
Subtopic HUM 4.1 — Benefits of teamwork ~~Stress~~				
~~ACS HUM 4.1.1~~	~~Recognise the effects of stress on performance.~~	~~1~~	~~Stress and its symptoms in self and in others~~ ~~*Optional content: Regulation (EU) 2017/373*~~	~~ALL~~
ACS HUM 4.1.1	State the benefits of teamwork.	1	Increased safety, efficiency and capacity	ALL
ACS HUM 4.1.2	List the controller's human performance elements affected by teamwork.	1	Situational awareness, communication, decision-making, threat and error management, workload management	ALL
Subtopic HUM 4.2 — ~~Stress~~ Conflict management				
ACS HUM 4.2.1	Identify the reasons for conflict.	3		ALL
ACS HUM 4.2.2	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
ACS HUM 4.2.3	Describe actions to prevent human conflicts.	2		ALL
~~ACS HUM 4.2.1~~	~~Act to reduce stress.~~	~~3~~	~~The effect of personality in coping with stress, the benefits of active stress management~~	~~ALL~~
~~ACS HUM 4.2.2~~	~~Respond to stressful situations by offering, asking or accepting assistance.~~	~~3~~	~~*Optional content: the benefits of offering, accepting and asking for help in stressful situations*~~	~~ALL~~
~~ACS HUM 4.2.3~~	~~Recognise the effect of shocking and stressful events.~~	~~1~~	~~Self and others, abnormal situations, Critical Incident Stress Management (CISM)~~	~~ALL~~
~~ACS HUM 4.2.4~~	~~Consider the benefits of Critical Incident Stress Management (CISM).~~	~~2~~		~~ALL~~
~~ACS HUM 4.2.5~~	~~Explain procedures to be used following an incident/accident.~~	~~2~~	~~*Optional content: CISM, counselling, human element*~~	~~ALL~~

TOPIC HUM 5 — SYSTEMS				
Subtopic HUM 5.1 — Concept of systems in ATM/ANS				
ACS HUM 5.1.1	Explain the concept of systems.	2	People; procedures; equipment; ATM in system terms: simple, complicated, and complex systems; system thinking	ALL
ACS HUM 5.1.2	Describe how changes in one part of a system may impact the other parts.	2		ALL
ACS HUM 5.1.3	Describe the role of the human in the system.	2		ALL

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~**Subtopic HUM 5.1 — Human error**~~				
~~ACS HUM 5.1.1~~	~~Explain the relationship between error and safety.~~	~~2~~	~~Number and combination of errors, proactive versus reactive approach to discovery of error~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACS HUM 5.1.2~~	~~Differentiate between the types of error.~~	~~2~~	~~Slips, lapses, mistakes~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACS HUM 5.1.3~~	~~Describe error-prone conditions.~~	~~2~~	~~*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*~~	~~ALL~~
~~ACS HUM 5.1.4~~	~~Collect examples of different error types, their causes and consequences for ATC.~~	~~3~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACS HUM 5.1.5~~	~~Explain how to detect errors to compensate for them.~~	~~2~~	~~STCA, MSAW, individual and collective strategy~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACS HUM 5.1.6~~	~~Execute corrective actions.~~	~~3~~	~~Error compensation~~ ~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
~~ACS HUM 5.1.7~~	~~Explain the importance of error management.~~	~~2~~	~~*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practices*~~	~~ALL~~
~~ACS HUM 5.1.8~~	~~Describe the impact on an ATCO's performance following an occurrence/incident.~~	~~2~~	~~*Optional content: reporting, SMS, investigation, CISM*~~	~~ALL~~
~~**Subtopic HUM 5.2 — Violation of rules**~~				

~~TOPIC HUM 5 — HUMAN ERROR~~				
~~ACS HUM 5.2.1~~	~~Explain the causes and dangers of violation of rules becoming accepted as a practice.~~	~~2~~	~~*Optional content: ICAO Circular 314 — AN/178 Threat and Error Management (TEM) in Air Traffic Control*~~	~~ALL~~
TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
Subtopic HUM 6.1 — Communication				
ACS HUM 6.1.1	Explain effective communication in ATC operations.	2	ICAO Doc 9868	ALL
~~ACS HUM 6.1.1~~	~~Use communication effectively in ATC.~~	~~3~~		~~ALL~~
ACS HUM 6.1.2	Explain key strategies used to enable open communication.	2	*Optional content: active listening, active speaking, assertiveness, honesty, relevance, facts, neutrality*	ALL
~~ACS HUM 6.1.2~~	~~Analyse examples of pilot–controller communication for effectiveness.~~	~~4~~		~~ALL~~
ACS HUM 6.1.3	Describe the parameters affecting the controller's competence to communicate effectively.	2	Workload, mutual knowledge, controller versus pilot mental picture, distractions, sound, human conflicts *Optional content: communication between and within the team(s), in the simulator, with the pilots, instructors, coordination partners*	ALL
Subtopic HUM 6.2 — Effective feedback				
ACS HUM 6.2.1	Define feedback.	1		ALL
ACS HUM 6.2.2	Explain the purpose of receiving and giving feedback and its effect on performance.	2		ALL
ACS HUM 6.2.3	Consider the impact of communication styles on feedback and on conflict resolution.	2		ALL
ACS HUM 6.2.4	Integrate feedback into performance.	4		ALL
~~**Subtopic HUM 6.2 — Collaborative work within the same area of responsibility**~~				
~~ACS HUM 6.2.1~~	~~List communication means between controllers in charge of the same area of responsibility (sector or tower).~~	~~1~~	~~*Optional content: electronic, written, verbal and non-verbal communication*~~	~~ALL~~
~~ACS HUM 6.2.2~~	~~Explain consequences of the use of communication means on effectiveness.~~	~~2~~	~~*Optional content: strip legibility and encoding, label designation, feedback*~~	~~ALL~~
~~ACS HUM 6.2.3~~	~~List possible actions to provide a safe position handover.~~	~~1~~	~~*Optional content: rigour, preparation, overlap time*~~	~~ALL~~

TOPIC HUM 6 — COMMUNICATION ~~COLLABORATIVE WORK~~				
~~ACS HUM 6.2.4~~	~~Explain consequences of a missed position handover process.~~	~~2~~		~~ALL~~
~~Subtopic HUM 6.3 — Collaborative work between different areas of responsibility~~				
~~ACS HUM 6.3.1~~	~~List factors and means for an effective coordination between sectors and/or tower positions.~~	~~1~~	~~*Optional content: other sectors' constraints, electronic coordination tools*~~	~~ALL~~
~~Subtopic HUM 6.4 — Controller–pilot cooperation~~				
~~ACS HUM 6.4.1~~	~~Describe parameters affecting controller–pilot cooperation.~~	~~2~~	~~*Optional content: workload, mutual knowledge, controller versus pilot mental picture*~~	~~ALL~~

SUBJECT 8: EQUIPMENT AND SYSTEMS

~~The subject objective is:~~
~~Learners shall integrate knowledge and understanding of the basic working principles of equipment and systems, and comply with the equipment and system degradation procedures in the provision of ATS.~~

TOPIC EQPS 1 — VOICE COMMUNICATIONS				
Subtopic EQPS 1.1 — Radio communications				
ACS EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ACS EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
ACS EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
Subtopic EQPS 1.2 — Other voice communications				
ACS EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL

TOPIC EQPS 2 — AUTOMATION IN ATS				
Subtopic EQPS 2.1 — Aeronautical fixed telecommunication network (AFTN)				
ACS EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAMs, SNOWTAMs, BIRDTAMs, etc.*	ALL
Subtopic EQPS 2.2 — Automatic data interchange				
ACS EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	~~ADV~~ ADC~~I~~ APS ACS

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
Subtopic EQPS 3.1 — Operation and monitoring of equipment				
ACS EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ACS EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems, UDF/VDF*	ALL
ACS EQPS 3.1.3	Operate the available equipment in abnormal and emergency situations.	3		ALL
Subtopic EQPS 3.2 — Situation displays and information systems				
ACS EQPS	Use situation displays.	3		ALL

TOPIC EQPS 3 — CONTROLLER WORKING POSITION				
3.2.1				
ACS EQPS 3.2.2	Check the availability of information.	3		ALL
ACS EQPS 3.2.3	Obtain information from equipment.	3		APP ACP APS ACS
Subtopic EQPS 3.3 — Flight data systems				
ACS EQPS 3.3.1	Use the flight data information at the controller working position.	3		ALL
Subtopic EQPS 3.4 — Use of the ATS surveillance system				
ACS EQPS 3.4.1	Use the ATS surveillance system functions.	3		APS ACS
ACS EQPS 3.4.2	Analyse the information provided by the ATS surveillance system.	4		APS ACS
ACS EQPS 3.4.3	Assign codes.	4		APS ACS
ACS EQPS 3.4.4	Appreciate the use of advanced surveillance technology.	3	*Optional content: Mode S, ADS-B, MLAT*	APS ACS
Subtopic EQPS 3.5 — Advanced systems				
ACS EQPS 3.5.1	Appreciate the use of controller–pilot data link communications when available.	3		APS ACS
ACS EQPS 3.5.2	Characterise ~~Appreciate~~ the use of information provided by advanced systems.	2	MTCD, AMAN, DMAN *Optional content: trajectory-based information, ~~MTCD,~~ MONA, etc.*	APS ACS

TOPIC EQPS 4 — FUTURE EQUIPMENT				
Subtopic EQPS 4.1 — New developments				
ACS EQPS 4.1.1	Recognise future developments.	1	New advanced systems *Optional content: European ATM Master Plan, European Plan for Aviation Safety*	ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
Subtopic EQPS 5.1 — Reaction to limitations				
ACS EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL

TOPIC EQPS 5 — EQUIPMENT AND SYSTEMS' LIMITATIONS AND DEGRADATION				
ACS EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
Subtopic EQPS 5.2 — Communication equipment degradation				
ACS EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground–air and landline communications*	APP ACP APS ACS
ACS EQPS 5.2.2	Apply contingency procedures in the event of communication equipment degradation.	3	*Optional content: procedures for total or partial degradation of ground–air and landline communications, alternative methods of transferring data*	~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL
Subtopic EQPS 5.3 — Navigational equipment degradation				
ACS EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: ~~VOR,~~ navigational aids, 'European GNSS Contingency/Reversion Handbook for PBN Operations'*	ALL
ACS EQPS 5.3.2	Apply contingency procedures in the event of ~~a~~ navigational equipment degradation.	3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	~~ADI~~ ~~APP~~ ~~ACP~~ ~~APS~~ ~~ACS~~ ALL
Subtopic EQPS 5.4 — Surveillance equipment degradation				
ACS EQPS 5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, loss of certain facilities, total failure	APS ACS
ACS EQPS 5.4.2	Apply contingency procedures in the event of surveillance equipment degradation.	3	*Optional content: inform adjacent sectors, inform aircraft, apply vertical separation (emergency), increased horizontal separation, reduce the number of aircraft entering area of responsibility, transfer aircraft to another unit*	APS ACS
Subtopic EQPS 5.5 — ATC processing system degradation				
ACS EQPS 5.5.1	Identify ~~a~~ processing system degradation.	3	*Optional content: FDPS, SDPS, software processing of situation display*	APS ACS
ACS EQPS 5.5.2	Apply contingency procedures in the event of ~~a~~ processing system degradation.	3		APS ACS

SUBJECT 9: PROFESSIONAL ENVIRONMENT

~~The subject objective is:~~
~~Learners shall identify the need for close cooperation with other parties concerning ATM operations and appreciate aspects of environmental protection.~~

TOPIC PEN 1 — FAMILIARISATION				
Subtopic PEN 1.1 — Study visit to an area control centre				
ACS PEN 1.1.1	Appreciate the functions and provision of operational area control service.	3	Study visit to an area control centre	ACP ACS

TOPIC PEN 2 — AIRSPACE USERS				
Subtopic PEN 2.1 — Contributors to civil ATS operations				
ACS PEN 2.1.1	Characterise civil ATS activities in area control centre.	2	Study visit to an area control centre *Optional content: familiarisation visits to TWR, APP, AIS, RCC*	ACP ACS
ACS PEN 2.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to engineering services, firefighting and emergency services, airline operations offices*	ALL
Subtopic PEN 2.2 — Contributors to military ATS operations				
ACS PEN 2.2.1	Characterise military ATS activities.	2	*Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, ~~A~~air ~~D~~defence ~~U~~units*	ALL

TOPIC PEN 3 — CUSTOMER RELATIONS				
Subtopic PEN 3.1 — Provision of services and user requirements				
ACS PEN 3.1.1	Appreciate ~~Identify~~ the role of an air navigation ~~ATC as a~~ service provider.	3	Regulation (EU) 2018/1139	ALL
ACS PEN 3.1.2	Appreciate ATS users' requirements.	3		ALL

TOPIC PEN 4 — ENVIRONMENTAL PROTECTION				
Subtopic PEN 4.1 — Environmental protection				
ACS PEN 4.1.1	Appreciate the mitigation techniques used en-route to minimise ~~the~~ aviation's impact on the environment.	3	*Optional content: free route airspace (FRA), night/weekend routes, continuous descent operations (CDO), continuous climb operations (CCO), ICAO Doc 10013 ~~Circular 303~~ — Operational opportunities to reduce ~~Minimize~~ fuel burn ~~Use~~ and ~~Reduce~~ emissions*	~~ACP~~ ACS

SUBJECT 10: ABNORMAL AND EMERGENCY SITUATIONS

~~The subject objective is:~~
~~Learners shall develop a professional attitude to manage traffic in abnormal and emergency situations.~~

TOPIC ABES 1 — ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 1.1 — Overview of ABES				
ACS ABES 1.1.1	List common abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure, unreliable instruments, runway incursion, GNSS failure*	ALL
ACS ABES 1.1.2	Identify potential or actual abnormal and emergency situations.	3		ALL
ACS ABES 1.1.3	Take into account the procedures for given abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
ACS ABES 1.1.4	Take into account that procedures do not exist for all abnormal and emergency situations.	2	*Optional content: real-life examples*	ALL
ACS ABES 1.1.5	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.1 — Communication effectiveness				
ACS ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, radio silence instruction	ALL
ACS ABES 2.1.2	Apply change of radiotelephony call sign.	3	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444*	ALL
Subtopic ABES 2.2 — Avoidance of mental overload				
ACS ABES 2.2.1	Describe actions to keep the situation under control.	2	*Optional content: sector-splitting, holding, flow management, task delegation*	ALL
ACS ABES 2.2.2	Organise priority of actions.	4		ALL
ACS ABES 2.2.3	Ensure the effective dissemination of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.*	ALL
ACS ABES 2.2.4	Consider asking for help.	2		ALL

TOPIC ABES 2 — SKILLS IMPROVEMENT				
Subtopic ABES 2.3 — Air–ground cooperation				
ACS ABES 2.3.1	Collect appropriate information relevant to the situation.	3		ALL
ACS ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL

TOPIC ABES 3 — PROCEDURES FOR ABNORMAL AND EMERGENCY SITUATIONS (ABES)				
Subtopic ABES 3.1 — Application of procedures for ABES				
ACS ABES 3.1.1	Apply the procedures for given abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ground-based safety nets alerts, airframe failure*	ALL
Subtopic ABES 3.2 — Radio failure				
ACS ABES 3.2.1	Describe the procedures to be followed by a pilot when experiencing ~~that pilot experiences~~ complete or partial radio failure.	2	Regulation (EU) No 923/2012 *Optional content: ICAO Doc 4444, military procedures, simulator operation procedures*	ALL
ACS ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	Regulation (EU) No 923/2012 *Optional content: prolonged loss of communication*	ALL
Subtopic ABES 3.3 — Unlawful interference and aircraft bomb threat				
ACS ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	Regulation (EU) No 923/2012 *Optional content: simulator operation procedures*	ALL
Subtopic ABES 3.4 — Strayed or unidentified aircraft				
ACS ABES 3.4.1	Apply the procedures for~~in the case of~~ strayed aircraft.	3	Regulation (EU) No 923/2012 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ACS ABES 3.4.2	Apply the procedures for~~in the case of~~ unidentified aircraft.	3	Regulation (EU) No 923/2012	ALL
Subtopic ABES 3.5 — Diversion~~s~~				
ACS ABES 3.5.1	Provide navigational assistance to aircraft diverting in emergency.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS
Subtopic ABES 3.6 — Transponder failure				
ACS ABES 3.6.1	Apply procedures in the event of an SSR transponder failure.	3	Regulation (EU) No 923/2012 *Optional content: total/partial failure, impact on ADS-B/Mode S capability*	APS ACS
Subtopic ABES 3.7 — Interception of civil aircraft				
ACS ABES 3.7.1	Explain the procedures in the event of interception of civil aircraft.	2	Regulation (EU) No 923/2012	*ALL*

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AMC1 ATCO.D.010(a)(1) Composition of initial training

BASIC TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

[Please find the link to the ~~concerned~~ AMC here]

~~AMC1 ATCO.D.010(a)(2)(i) Composition of initial training~~

~~**AERODROME CONTROL VISUAL RATING (ADV) TRAINING — SUBJECT OBJECTIVES AND TRAINING OBJECTIVES**~~

~~[Please find the link to the concerned AMC here]~~

AMC1 ATCO.D.010(a)(2)(i~~i~~) Composition of initial training

AERODROME CONTROL ~~INSTRUMENT~~ RATING ~~FOR TOWER~~ (ADI~~:~~C) ~~(TWR)~~ TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

[Please find the link to the ~~concerned~~ AMC here]

AMC1 ATCO.D.010(a)(2)(ii~~i~~) Composition of initial training

APPROACH CONTROL PROCEDURAL RATING (APP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

[Please find the link to the ~~concerned~~ AMC here]

AMC1 ATCO.D.010(a)(2)(iii~~v~~) Composition of initial training

AREA CONTROL PROCEDURAL RATING (ACP) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

[Please find the link to the ~~concerned~~ AMC here]

AMC1 ATCO.D.010(a)(2)(iv) Composition of initial training

APPROACH CONTROL SURVEILLANCE RATING (APS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

[Please find the link to the ~~concerned~~ AMC here]

AMC1 ATCO.D.010(a)(2)(v~~i~~) Composition of initial training

AREA CONTROL SURVEILLANCE RATING (ACS) TRAINING — ~~SUBJECT OBJECTIVES AND~~ TRAINING OBJECTIVES

[Please find the link to the ~~concerned~~ AMC here]

SECTION 3 — UNIT TRAINING REQUIREMENTS

AMC1 ATCO.D.045(c)(4) Composition of unit training

HUMAN FACTORS

(a) Training organisations should train ~~the~~ applicants during ~~on the job~~ unit training in team resource management, fatigue management and stress management.

(b) Training organisations should develop performance objectives for the team resource management training.

(c) The team resource management training may also make use of synthetic training devices.

(d) Training organisations should develop training objectives for the fatigue management and stress management training.

AMC2 ATCO.D.045(c)(4) Composition of unit training

HUMAN FACTORS TRAINING

Human factors training should include, as a minimum, the following topics and related objectives:

(a) Basic needs of people at work

(1) List the basic needs of people at work.

(2) Characterise the factors for work satisfaction.

(b) Human performance

(1) Describe the impact of responsibility on an air traffic controller's actions.

(2) Recognise the different responsibilities of an air traffic controller.

(c) Work environment

(1) Explain the reasons for automation.

(2) Describe the advantages and constraints of automation.

(d) Team resource management (TRM)

(1) Explain the relevance of TRM.

(2) Describe the content of the TRM concept.

(e) Stress and fatigue management

(1) Describe the fatigue and stress management policy(ies) in force (at the ATS unit).

(2) Explain the procedure(s) in force for air traffic controllers to report stress and fatigue (at the ATS unit).

(3) Consider the benefits of critical incident stress management (CISM).

(f) Human error

(1) Describe the impact an occurrence/incident may have on an air traffic controller.

(2) Explain the causes and dangers of violation of rules becoming accepted as common practice.

AMC1 ATCO.D.055(b)(6) Unit training plan

DURATION OF UNIT ENDORSEMENT COURSES

(a) The on-the-job training instruction as part of the unit endorsement course should be at least of the duration specified in Annex 1 to the Chicago Convention, Sections 4.5.2.2.1(b) and (c) and 4.5.2.2.3.

(b) Notwithstanding point (a), the minimum duration of the on-the-job training instruction for the surveillance radar approach rating endorsement may be partly substituted by utilising a simulator, if approved by the competent authority.

~~The ratings named in Annex 1 to the Chicago Convention, Section 4.5.2.2.1(b), should be read in the context of this Regulation:~~

~~(1) aerodrome control rating: ADV and ADI ratings;~~

~~(2) approach control procedural rating: APP rating;~~

~~(3) approach control surveillance rating: APS rating;~~

~~(4) area control procedural rating: ACP rating;~~

~~(5) area control surveillance rating: ACS rating.~~

(c) The approach precision radar control rating in Annex 1 to the Chicago Convention, Section 4.5.2.2.1(b), should be read in the context of this Regulation as APS-PAR rating endorsement according to point ATCO.B.015.

(d) The inclusion of surveillance radar approach duties in the privileges of the approach control surveillance rating in Annex 1 to the Chicago Convention, Section 4.5.2.2.1(c), should be read in the context of this Regulation as APS-SRA rating endorsement according to point ATCO.B.015.

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GM1 ATCO.D.055(b)(7) Unit training plan

ADAPTING THE UNIT ENDORSEMENT COURSE(S)

When an applicant already holds the same rating for another unit, the training organisation may determine whether the unit endorsement course can be reduced, and if so, to what extent.

AMC1 ATCO.D.060(c) Unit endorsement course

UNIT ENDORSEMENT COURSE IN UNITS THAT PROVIDE GROUND MOVEMENT SURVEILLANCE CONTROL

The training for the provision of ground movement control with the support of aerodrome surface movement guidance systems should be included in the unit endorsement course.

AMC2 ATCO.D.060(c) Unit endorsement course

UNIT ENDORSEMENT COURSE IN UNITS THAT PROVIDE TERMINAL CONTROL

The training for the provision of air traffic control (ATC) services with the use of any surveillance equipment to aircraft that operate in a specified terminal area and/or adjacent sectors should be included in the unit endorsement course. For area control surveillance (ACS) rating holders, the training should include objectives of initial training for the approach control surveillance (APS) rating related to terminal control.

SECTION 4 — CONTINUATION TRAINING REQUIREMENTS

GM1 ATCO.D.080(b)(3) Refresher training

TRAINING IN TEAM RESOURCE MANAGEMENT (TRM)

Guidance on team resource management can be found in the Network Manager document 'Team Resource Management — Guidelines for the Implementation and Enhancement of TRM', edition 1.0 of 26 April 2021, and associated Annex A to TRM Guidance Material - TRM Modules | SKYbrary Aviation Safety and Annex B to TRM Guidance Material - Facilitator Competence and Training | SKYbrary Aviation Safety).