Edition 1.0
Edition date: 21/10/2008
Reference nr: EUROCONTROL-SPEC-113
ISBN: 978-2-87497-055-9

EUROCONTROL Specifications

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

EUROCONTROL

EUROPEAN ORGANISATION
FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Edition Number	:	1.0
Edition Date	:	21/10/2008
Status	:	Released Issue
Intended for	:	EATM Stakeholders

EUROPEAN AIR TRAFFIC MANAGEMENT

DOCUMENT CHARACTERISTICS

TITLE		
EUROCONTROL Specification for the ATCO Common Core Content Initial Training		
Document Identifier	**Edition Number:**	1.0
EUROCONTROL-SPEC-0113	**Edition Date:**	21/10/2008

Abstract

This document provides Specification for ATCO common core content Initial (Basic and Rating training) training

It includes a main body of text, explaining the background, context, traceability and use of the Common Core Content Initial Training principles relevant to various syllabi, and seven separate Annexes. Annex 1 corresponds to the Basic training while the six others correspond to the ratings contained in the Student Air Traffic Controller Licence described in the "European Manual of Personnel Licensing – Air Traffic Controllers".

The current document, referred to as EUROCONTROL-SPEC-0113, results from the revision of Guidelines for ATCO Common Core Content Initial Training (T14, edition 2.0)

Keywords

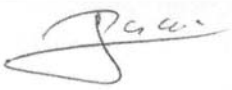
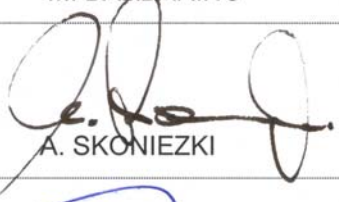
Specification	Initial Training	Ratings	CCC
Area Surveillance	Area Procedural	Aerodrome Visual	Basic Training
Approach Surveillance	Approach Procedural	Aerodrome Instrument	

Contact(s) Person	Tel	Unit
Vladimir Bubalo	+352-43.60.61.924	Training Development and Harmonisation (TDH) Unit

STATUS, AUDIENCE AND ACCESSIBILITY					
Status		**Intended for**		**Accessible via**	
Working Draft	☐	General Public	☐	Intranet	☐
Draft	☐	EATM Stakeholders	☑	Extranet	☐
Proposed Issue	☐	Restricted Audience	☐	Internet (www.eurocontrol.int)	☑
Released Issue	☑	http://www.eurocontrol.int/humanfactors/gallery/content/public/docs/DELIVERABLES/ESATCOCCCIT_Binder.pdf			

DOCUMENT APPROVAL

The following table identifies all management authorities who have successively approved the present issue of this document.

AUTHORITY	NAME AND SIGNATURE	DATE
Chairman HRT Training Focus Group (TFG)	 M. PISTRE	29 Sep 2008
Manager SENSE Programme Chairman Human Performance Focus Group (HPFG)	 M. BARBARINO	14 Oct 2008
Chairman EATM Human Resources Team (HRT)	 A. SKONIEZKI	14. Oct. 2008
Director ATM Programmes (DAP)	 G. KERKHOFS	15 Oct 2008
Head of Regulatory Unit (RU)	 J-L. GARNIER	17/10/08
Director General EUROCONTROL (DG)	 D. MCMILLAN	23/10/08

DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION NUMER	EDITION DATE	REASON FOR CHANGE	PAGES AFFECTED
0.96	04.02.2008	First Edition as Eurocontrol Specification – Draft released by ATCO CCC TF	All
0.97	19.03.2008	First Edition as Eurocontrol Specification – Draft approved by HRT for submission through the ERAF (formal consultation) Process - inclusion of the “just culture” objective	All
0.98	04.04.2008	Draft revised by RU	All
0.99	15.07.2008	Draft revised by EUROCONTROL Review Group after the ERAF (formal consultation) Process	All
1.0	10.09.2008	Proposed issue after the Stakeholders Consultation Workshop	All
1.0	21.10.2008	Released issue	All

Contents

EXECUTIVE SUMMARY

The EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the minimum training requirement for the achievement of a Student Air Traffic Controller Licence in accordance with Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence, and the minimum training requirement in accordance with EUROCONTROL Safety Regulatory Requirement on ATM Services' Personnel Ed. 2.0 (ESARR5).

This document is the first edition of the ATCO Common Core Content Initial Training as a EUROCONTROL Specification and is the result of a major review conducted by the ATCO Common Core Content Task Force, and subsequent upgrade of the following document:

- Guidelines for ATCO Common Core Content Initial Training, referred to as T14, Edition 2.0, dated 10 December 2004.

This Specification shall be used by training providers and regulators to ensure that all relevant training objectives have been included in any courses that are intended to be Common Core Content Initial Training compliant.

The Specification contains information relevant to the background, context, traceability and use of the Common Core Content Initial Training document. It is necessary to understand the fundamental principles covered in this document prior to examining the specific training syllabi.

Associated with the Specification are seven separate Annexes. Each Annex contains a complete syllabus for the following:

- Annex 1: Basic syllabus
- Annex 2: Aerodrome Control Visual Rating syllabus
- Annex 3: Aerodrome Control Instrument Rating with TWR syllabus
- Annex 4: Approach Control Procedural Rating syllabus
- Annex 5: Area Control Procedural Rating syllabus
- Annex 6: Approach Control Surveillance Rating with Radar syllabus
- Annex 7: Area Control Surveillance Rating with Radar syllabus

References, abbreviations and acronyms used in this publication, and the list of contributors complete the document.

1. Introduction

The **EUROCONTROL Specification for the ATCO Common Core Content Initial Training** contains the Initial Training syllabus. This specification consists of a main body of text (i.e. this part of the document), explaining the fundamental principles for understanding and applying the various syllabi in seven separate Annexes. Each annex contains a complete syllabus.

These syllabi are, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Initial Training of ATCOs.

In addition, for EU Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in Initial Training of ATCOs.

2. Background

The ECAC Strategy for the nineties called for the definition of guidelines for the selection, training and licensing of Air Traffic Services staff in the ECAC Member States.

The Human Resources Team, within the European Air Traffic Control Harmonisation and Integration Programme, which was later to become the European Air Traffic Management Programme and is known simply as European Air Traffic Management, established through its Training Sub-Group, now known as the Training Focus Group, the Task Force Common Core Content (TF-CCC) to design a set of common core contents for Air Traffic Controller training.

The TF-CCC created a guideline standard for the training of ATCOs. The guideline standard included syllabi and training objectives that were considered to be common to all ECAC Member States, hence the term "common core content". The syllabi covered training objectives for ATCOs from entry into training, to the issue of a Student Air Traffic Control Licence. This phase of training has become known as Initial Training and includes both Basic and Rating Training. The document, through its various revisions became known as the **Guidelines for ATCO Common Core Content Initial Training**.

On 10th November 2003, the **EUROCONTROL Safety Regulatory Requirement (ESARR5) on ATM Services Personnel** was published. This document required that Initial Training of ATCOs satisfy, as a minimum, the contents of the Guidelines for Common Core Content Training. This effectively, was the first step towards making the "Guidelines" a mandatory requirement.

A second step was taken on the 5th April 2006, when the EC introduced its Directive on a Community Air Traffic Controller Licence. The Directive, for which EU Member States will need to demonstrate compliance by the 17th May 2008, refers to the Guidelines for ATCO Common Core Content Initial Training Ed. 2.0. One of the conditions for the granting of an air traffic controller licence is that the applicant must have successfully completed approved initial training relevant to the rating and rating endorsement, if applicable. The initial training must satisfy at least the objectives for basic and rating training as described in the above mentioned document.

The ATCO CCC Task Force was formed in November 2005 to complete a major review of the Common Core Content. During its review process, the Task Force agreed that, given the mandatory nature of the document, the word “Guideline” in the title was misleading. After completion of the major review, the document was submitted, through the EUROCONTROL Regulatory and Advisory Framework processes, for approval as a EUROCONTROL Specification. The **EUROCONTROL Specification for the ATCO Common Core Content Initial Training** was approved on the 21st October 2008.

3. Intended users

This document is aimed at:

- **Training providers** who are responsible for the development of Common Core Content compliant courses. This document shall be used as a reference to ensure that all the relevant objectives have been included in the appropriate courses.

- **Regulators** who are responsible for certifying Common Core Content compliant courses. This document shall be used as a reference to ensure that all the relevant objectives have been included in the appropriate courses.

4. Drafting Conventions

The following drafting conventions are used within this document:

- “Shall” – indicates a statement of specification, the compliance with which is mandatory to achieve the implementation of the EUROCONTROL Specification.

- “Should” – indicates a recommendation, the compliance with which is encouraged to achieve best possible implementation of the specification.

- “May” – indicates a discretionary element.

5. Traceability to Regulatory Requirements

The implementation of the mandatory elements of this Specification relate to the following regulatory requirements:

5.1 *EUROCONTROL Safety Regulatory Requirement (ESARR5) ATM Services Personnel. Edition 2.0. Dated 11/04/2002*

para. 5.2.1.9 require initial ATC training courses to satisfy, as a minimum, the ECAC guidelines for Common Core Content training.

Note – The reference in ESARR5 to the “ECAC guidelines for Common Core Content training” will be amended to the “EUROCONTROL Specification for the ATCO Common Core Content Initial Training” once this document is approved as a Specification.

5.2 *Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence*

Article 5, para 1. – Student air traffic controller licences shall be granted to applicants who:

(a) …
(b) have successfully completed approved initial training relevant to the rating, and rating endorsement, if applicable, as set out in Part A of Annex II.
(c) …

Part A, Annex II – Initial training will ensure that student air traffic controllers satisfy at least the objectives for basic and rating training, as described in Eurocontrol's "Guidelines for air traffic controller Common Core Content Initial Training" edition of 10 December 2004, so that air traffic controllers are capable of handling air traffic in a safe, quick and efficient way.

Note - The reference in the Directive to "Guidelines for air traffic controller Common Core Content Initial Training" edition of 10 December 2004", will be amended to the "EUROCONTROL Specification for the ATCO Common Core Content Initial Training" once this document is approved as a Specification.

Article 14, para. 1 – In order to ensure the levels of competence indispensable for air traffic controllers in order for them to perform their work to high safety standards, the Member States shall ensure that national supervisory authorities supervise and monitor their training.

Their tasks shall include:
(a) …
(b) …
(c) …
(d) the approval of training courses, unit training plans and unit competence schemes.
(e) …

6. Context

6.1 *Training Context*

ATCO training is divided into four phases, of which Initial Training is the first phase. The following section briefly describes all the phases of ATCO training, so as to put the Initial Training phase in its correct context.

6.1.1 Initial Training

Training including theory, part-task practice and simulation. The object of initial training is to prepare an *ab initio* for training at an Air Traffic Control (ATC) unit. It includes two phases (basic and rating training) leading to a student licence. Rating training might also be provided as training for conversion to another rating.

6.1.1.1 Basic Training

Training designed to impart fundamental knowledge and skills to enable an *ab initio* to progress to specialised ATC training.

6.1.1.2 Rating Training

Specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment.

6.1.2 Unit Training

Training comprising transitional training, pre-OJT and OJT, leading a learner to obtaining an air traffic controller licence, with appropriate rating and with appropriate rating endorsements and unit endorsements.

6.1.2.1 Transitional Training

Phase following initial training during which site-specific theoretical knowledge and understanding will be transferred to the student air traffic controller and/or trainee air traffic controller using a variety of methods and during which skills will be developed through the use of site-specific simulations.

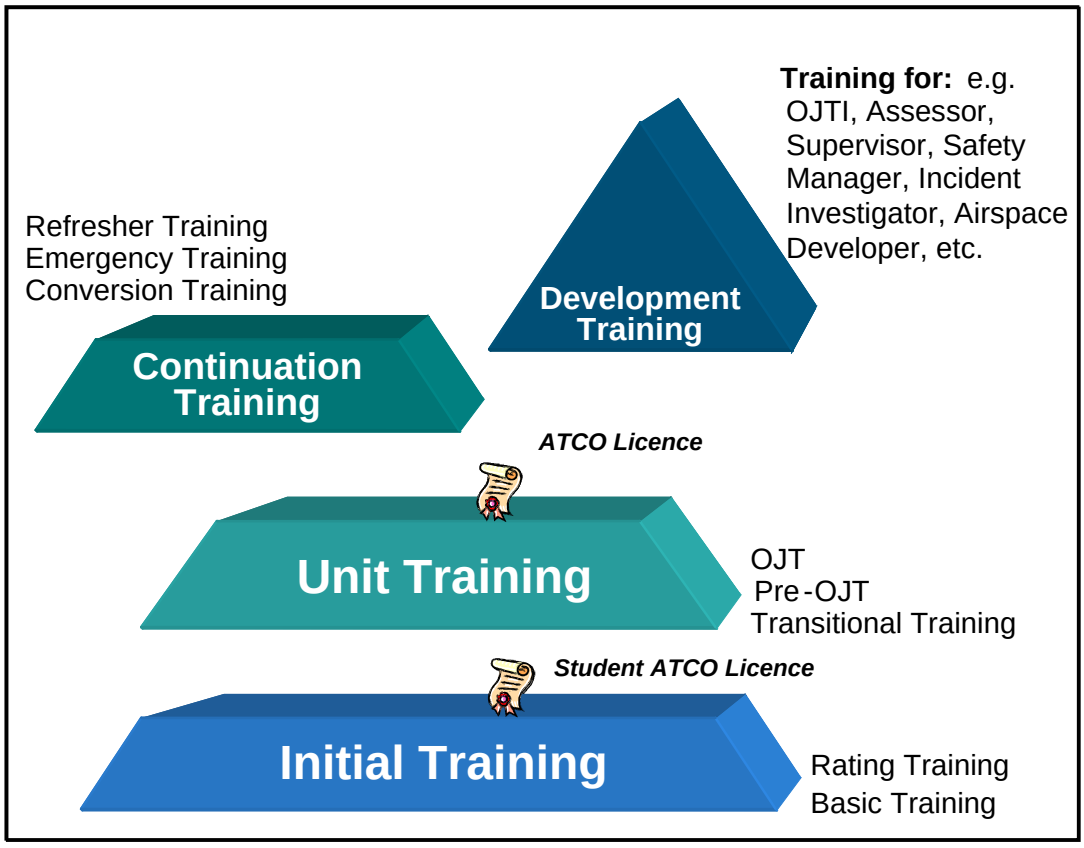


Figure 1: Progression of ATCO Training

6.1.2.2 Pre-On-the-Job Training (Pre-OJT)

Phase of locally based training during which extensive use of simulation using site-specific facilities will enhance the development of previously acquired routines and abilities to an exceptionally high level of achievement.

6.1.2.3 On-the-Job Training (OJT)

The integration in practice of previously acquired job-related routines and skills under the supervision of a qualified On-the-Job Training Instructor (OJTI) in a live traffic situation.

6.1.3 Continuation Training

Training given to licensed or certificated personnel designed to augment existing knowledge and skills. It includes refresher, emergency and conversion training.

6.1.3.1 Refresher Training

Refresher training is designed to review, reinforce or upgrade existing knowledge and skills (including team skills).

6.1.3.2 Emergency Training

Training designed to impart knowledge, skills and behaviour in case of an emergency, unusual or degraded situation.

Emergency training that is part of initial training shall be generic, covering the situations common for all disciplines and some specific for the appropriate rating. More details about these situations are given in the respective syllabi.

More comprehensive emergency training that may include security measures shall be given to all controllers on a regular basis with the site specific content.

Emergency situation

A serious, unexpected and often dangerous situation requiring immediate actions.

Unusual situation

A set of circumstances which are neither habitually nor commonly experienced for which an ATCO has not developed an automatic know-how.

The essential difference with an emergency situation is that the element of danger or serious risk is not necessarily present in an unusual situation.

Degraded situation

A situation that is the result of a technical system failure or malfunction or a set of circumstances arising from human error or violation of rules affecting the quality of the service provided.

6.1.3.3 Conversion Training

Training designed to provide knowledge and skills appropriate to a change in either job category (rating discipline, rating endorsement or unit endorsement), procedures or system (system upgrade or change).

6.1.4 Development Training

Training designed to provide additional knowledge and skills demanded by a change in job profile, e.g. new licence endorsement (OJTI) or any other career development like assessor, supervisor, safety manager, incident investigator, airspace developer, training manager, traffic flow manager, etc.

6.2 *Licensing Context*

At the same time as the Guidelines of ATCO Common Core Content Initial Training was being developed, the European Manual of Personnel Licensing – Air Traffic Controllers was also being drafted. This Manual was first published in September 2000 and introduced a harmonised licensing scheme for ATCOs in the ECAC Member States. The Common Core Content training was designed to support the structure of this harmonised licensing scheme.

For a detailed understanding of the concept and application of the harmonised licensing scheme it is necessary to consult the European Manual of Personnel Licensing – Air Traffic Controllers. However, for the purpose of explaining the training context, a brief description is provided below.

The structure of the harmonised European ATC Licence retained the basic concept of the

ICAO licence, in that it used ratings to indicate the air traffic control disciplines in which controllers may provide air traffic services, however it introduced new ratings to meet European ATC requirements. These ratings are:

- Aerodrome Control Visual (ADV)
- Aerodrome Control Instrument (ADI)
- Approach Control Procedural (APP)
- Approach Control Surveillance (APS)
- Area Control Procedural (ACP)
- Area Control Surveillance (ACS)

In addition, the harmonised licensing scheme introduced the concept of rating endorsements. A rating endorsement associates a particular rating with the type of equipment used to provide the air traffic service, e.g. radar, ADS. Additionally, rating endorsements are used to indicate specialist skill areas within particular rating disciplines e.g. Ground Movement Control and Aerodrome Radar Control with ADI, or Terminal Control with ACS or APS.

Unit and licence endorsements are also defined in the Manual, however they are not detailed here due to their lack of relevance in Initial Training.

When defining the structure of the ATCO Common Core Content training, the Task Force agreed that a common basic level of knowledge and understanding was necessary for all ATCOs, irrespective of the final ATC discipline that they would pursue. These common basic objectives have become the Basic Training syllabus.

When defining the structure of the Rating Training, the Task Force determined the most likely and appropriate ratings and combinations of rating and rating endorsements to arrive at the Rating Training syllabi (e.g. the syllabi for APS and ACS have been designed for use with radar simulation equipment). These syllabi are:

- Aerodrome Control Visual Rating (ADV)
- Aerodrome Control Instrument Rating for Tower - ADI (TWR)
- Approach Control Procedural Rating (APP)
- Area Control Procedural Rating (ACP)
- Approach Control Surveillance Rating with Radar - APS (RAD)
- Area Control Surveillance Rating with Radar - ACS (RAD)

Further details on how these combinations of ratings and rating endorsements were determined and the application of these syllabi will be covered in the section 8.3 dealing with the “Flexible Use of CCC Syllabi”.

7. Scope

The EUROCONTROL Specification for the ATCO Common Core Content Initial Training, as its title implies, is concerned with the Initial Training. This document and the associated annexes, contain the syllabi for Basic and Rating Training. The fundamental principles used in the syllabi are explained in chapter 8.

8. How to use this document

8.1 *Training Providers*

Training providers shall use this document as a reference when designing Common Core Content compliant courses. The composition of these courses is decided at the level of local implementation of the CCC. The final course(s) that are developed shall ensure that as a minimum, all the objectives from the Basic Training, and for each Rating/Endorsement syllabus selected, all of the objectives contained within that syllabus are satisfied. It is to be remembered that no objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabus.

Courses may include additional objectives that are deemed necessary by the training provider, e.g. objectives specific to the national or local environment.

Any of the syllabi may be combined to provide a single course.

Training providers must be familiar with the concepts of repeated and common objectives when structuring their courses. These concepts are explained in chapter 8.7.

8.2 *Regulators*

Regulators shall use this document as a reference, when approving courses, to ensure that, as a minimum, all the mandatory elements of the appropriate CCC syllabi have been satisfied. So as to ensure that the CCC syllabi have been applied correctly, regulators must be familiar with the fundamental principles pertaining to these syllabi.

8.3 *Flexible use of CCC syllabi*

The diagrams below may be used by training providers, when preparing courses, to assist in determining which syllabi will be appropriate to prepare ATC learners for a given ATC licence rating and/or endorsement.

The diagrams also indicate the links between the Initial Training syllabi. The CCC flexibility allows any combination or merging of the syllabi.

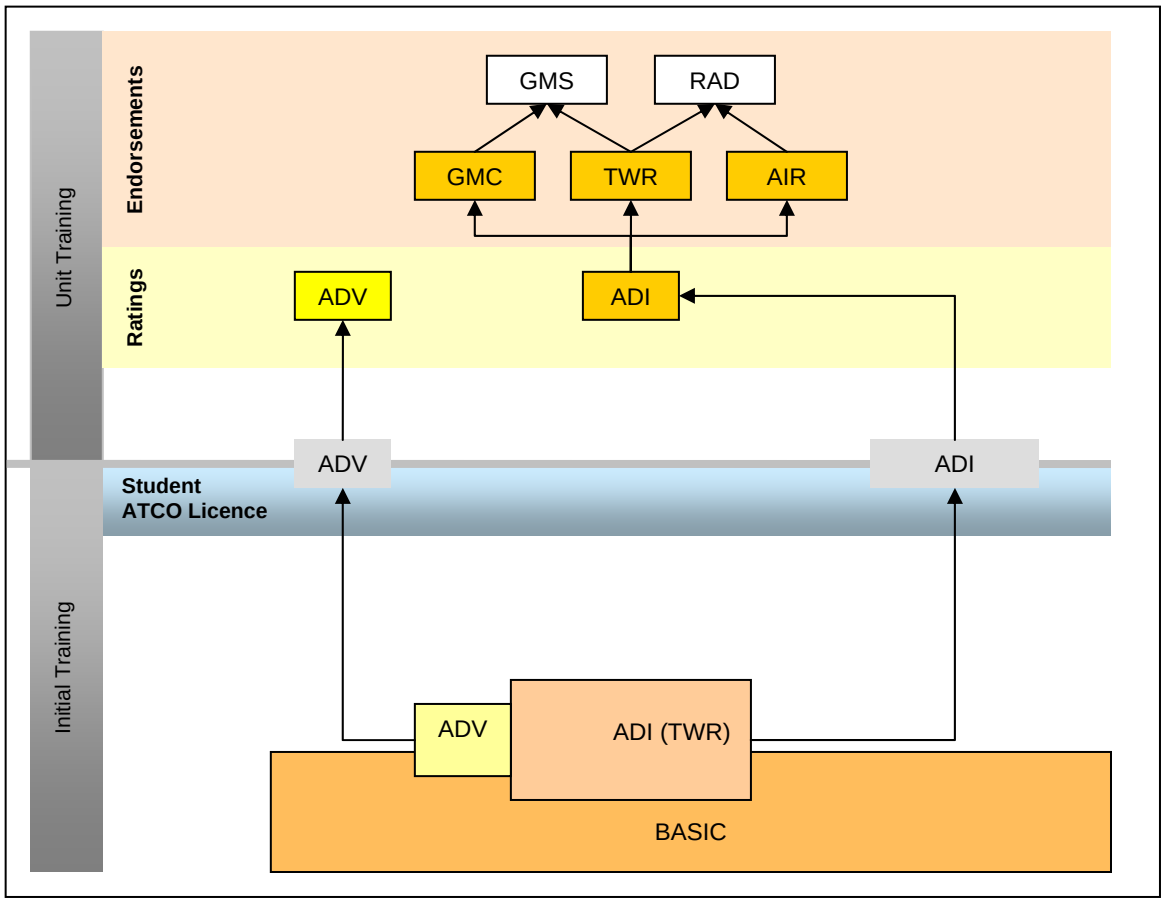


Figure 2: Relationship between Aerodrome Control CCC syllabi and ATC licence ratings and/or endorsements

Glossary of abbreviations used in the diagram

ADI	Aerodrome Control Instrument
ADI(TWR)	Aerodrome Control Instrument for Tower
ADV	Aerodrome Control Visual
AIR	Air Control
GMC	Ground Movement Control
GMS	Ground Movement Surveillance
RAD	Radar Control
TWR	Tower Control

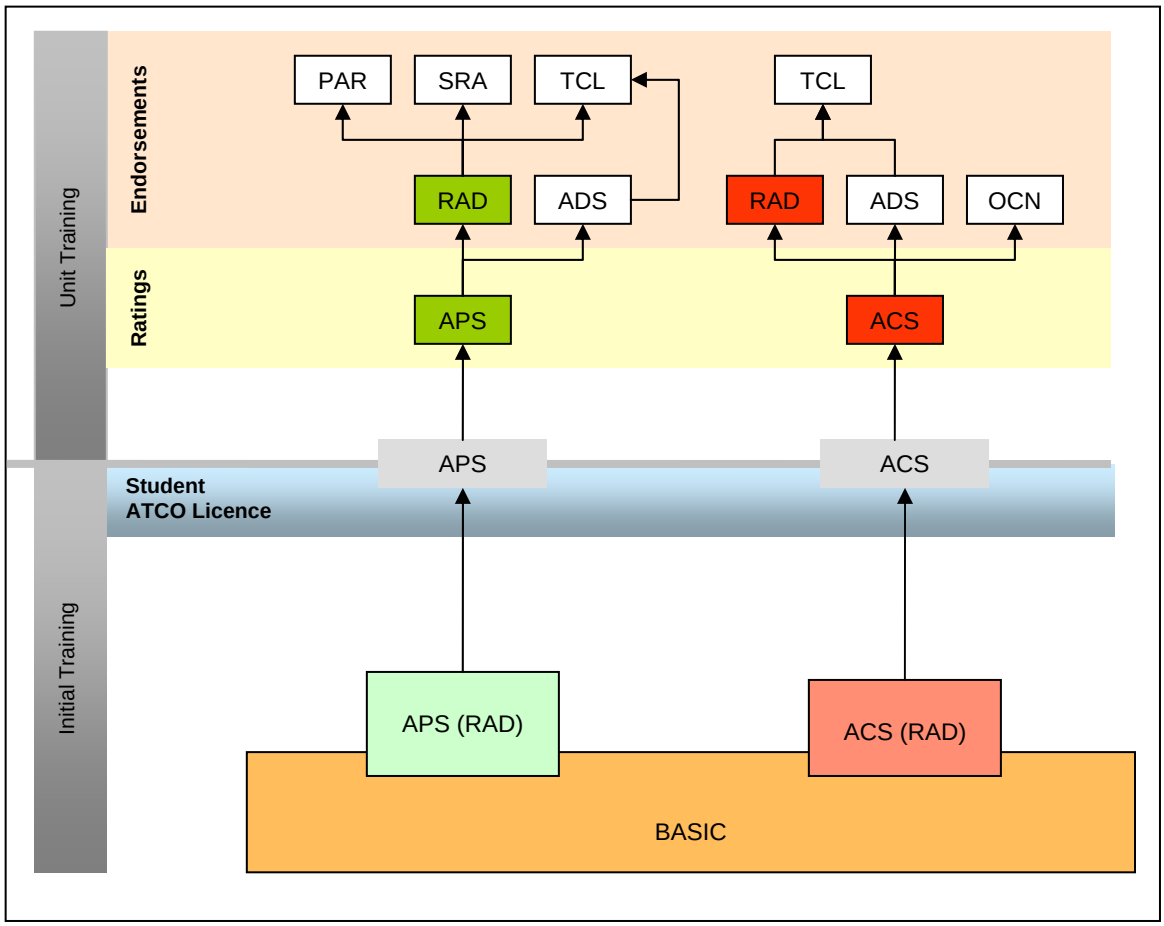


Figure 3: Relationship between Area and Approach Control Surveillance CCC syllabi and ATC licence ratings and/or endorsements

Glossary of abbreviations used in the diagram

ACS Area Control Surveillance

ADS Automatic Dependent Surveillance

APS Approach Control Surveillance

OCN Oceanic Control

PAR Precision Approach Radar

RAD Radar Control

SRA Surveillance Radar Approach

TCL Terminal Control

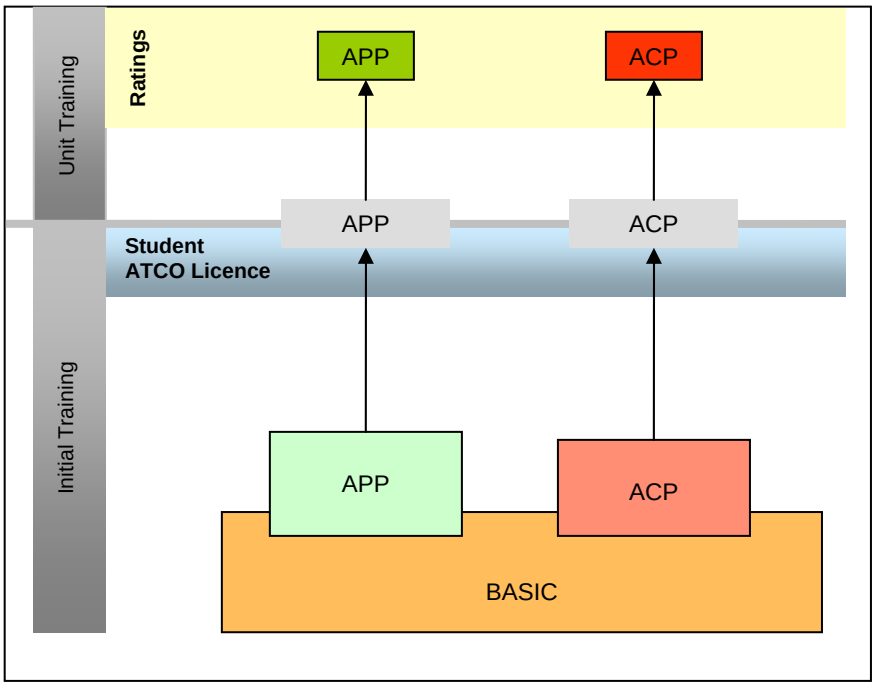


Figure 4: Relationship between Area and Approach Control Procedural CCC syllabi and ATC licence ratings

Glossary of abbreviations used in this diagram

ACP	Area Control Procedural
APP	Approach Control Procedural

8.4 *Specification structure*

The EUROCONTROL Specification for the ATCO Common Core Content Initial Training consists of a main body of text (i.e. this part of the document), explaining the fundamental principles for understanding and applying the various syllabi, and seven separate Annexes. Each Annex contains a complete syllabus.

It is necessary to understand the fundamental principles of the Common Core Content before proceeding to the syllabi.

		BASIC:	Annex 1 - Basic syllabus
RATING TRAINING	**AERODROME**	**ADV:**	Annex 2 – Aerodrome Control Visual Rating syllabus
		ADI/TWR:	Annex 3 - Aerodrome Control Instrument Rating for Tower syllabus
	PROCEDURAL	**APP:**	Annex 4 - Approach Control Procedural Rating syllabus
		ACP:	Annex 5 - Area Control Procedural Rating syllabus
	SURVEILLANCE	**APS/RAD:**	Annex 6 - Approach Control Surveillance Rating with Radar syllabus
		ACS/RAD:	Annex 7 - Area Control Surveillance Rating with Radar syllabus

8.5 *Syllabi structure*

Each syllabus is divided into subjects, which are divided into topics that are in turn divided into sub-topics. This structure is used to create and classify the objectives: one general objective is linked to each subject and one or several objectives are linked to each sub-topic.

Objectives are assigned to a specific subject which deals with the knowledge and skills fundamentally needed to accomplish the general objective performance.

Topics, sub-topics and objectives are organised and sequenced within each subject in order to facilitate the analysis of the document. One main purpose is to make visible the commonalities and differences between the syllabi. This clustering is not a chronological sequence. The structure of the CCC does not dictate the structure of a training course.

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

Each subject is shown as a header to a table. The subject's general objective is attached to this header.

Topics and sub-topics are laid out in rows. Sub-topics contain objectives. An objective consists of a corpus, taxonomy level and content.

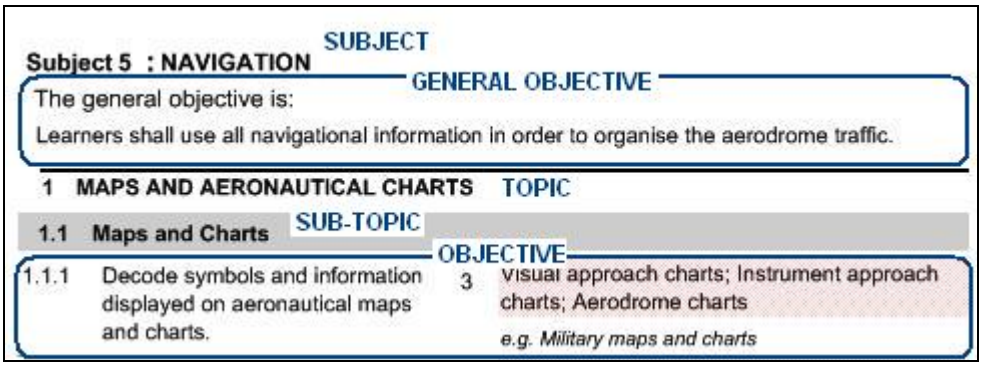


Figure 5: CCC Syllabus lay-out

Objectives are also laid out in rows consisted of three parts:

- The first part shows the objective number and corpus;
- The second part shows the taxonomy level;
- The third part shows the content (explicit or implicit) with a clear indication which items of the content are mandatory (the red shaded area) and which are optional (*small italics*).

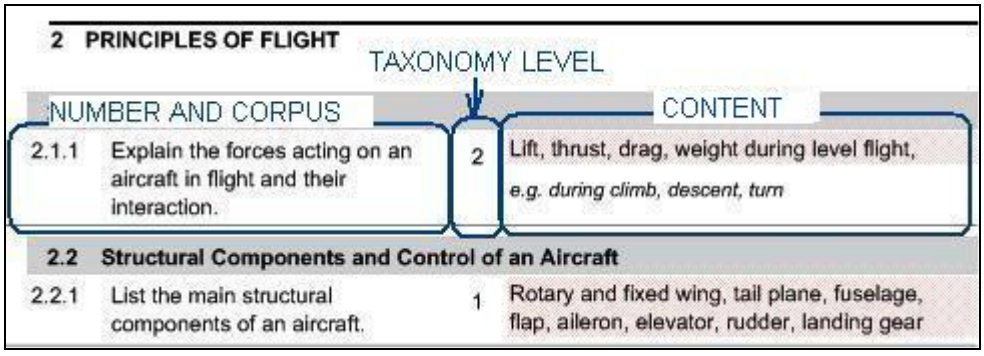


Figure 6: A CCC objective consists of a corpus, taxonomy level and content

8.6 *Objectives terminology and use*

The CCC syllabi refer to two categories of training objectives which are defined below:

General Objective:		Describes the direction to move in rather than a detailed quantitative objective
Objective:		A clear statement based on a corpus, level and content.
	Corpus:	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.
	Level:	Highlights numerically the taxonomy level of the action verb.
	Content:	May be implicit or explicit. (This concept will be explained below).

8.6.1 Corpus

The corpus is a description of the required performance. Where possible, objectives relate to single activities.

8.6.2 Level

The level contained in this column, relates directly to a defined taxonomy for classifying training objectives. The level is always associated with an action verb contained within the corpus.

There are five levels, plus an initial level (named 0) which is purely information. The levels are defined as follows:

Level 0	To be aware of
Level 1	A basic knowledge of the subject. It is the ability to remember essential points, to memorise data and retrieve it.
Level 2	The ability to understand and to discuss the subject matter intelligently in order to represent and act upon certain objects and events.
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.
Level 4	The ability to establish a line of action within a unit of known applications following the correct chronology and the adequate method to resolve a problem situation. This involves the integration of known applications in a familiar situation.
Level 5	The ability to analyse new situations 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 to those previous met, requiring judgement and evaluation of options.

The complete list of action verbs used in this document with the appropriate examples is given in Appendix 1.

8.6.2.1 Application of taxonomy levels to practically based objectives

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.

Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are by their nature practical 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 radio telephony, aircraft performance, navigation and radar theory.

Therefore, ATM level 3 objectives shall be achieved through the use of a part task trainer or a simulator.

ATM level 4 objectives shall 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.

ATM level 5 objectives shall be achieved through the use of a simulator.

Note: All references in this document, to the Controller Working Position, refer to the position in the simulator or PTT, as Initial training is not conducted in the live operational environment.

8.6.3 Content

The content illustrates and details the performance.

The content may be implicit and explicit. The explicit content is what is written in the content field proper to the objective, while the implicit content is not written in the content field of each objective but rather implied in the corpus of the objective and other elements (syllabus, subject, etc.).

Some conventions are applied to the wording of the explicit content:

- When the items are in a list, each of them is to be addressed. (According to the basic principles of CCC, local items may however be added subject to local training designer judgement.)
- When the items are in a list and terminated by **etc.**, each of them is to be addressed; and it is indicated to the training provider that additional items are foreseen but not of common interest all over the ECAC area.
- In a list, items following **e.g.** are optional. (These are more an illustration of the performance than a detailed specification.)

Even when all of the items are optional the objective has to be performed according to the action verb included.

For example, an ATM objective is

6.5.3	Provide radar separation by practising vectoring in a variety of situations.	4	*e.g. transit, meteorological phenomena, vectoring for approach, departure vs. transit vs. arrival*

Figure 7: CCC ATM objective with the optional content (e.g.)

The list of situations is preceded by e.g.. This statement enables flexibility for the choice of

the situations but does not intend to minimise the performance of radar vectoring.

In addition to the above mentioned conventions the content is divided in two rows with a clear indication which items of the content are mandatory (the red shaded area) and which are optional (*small italics*).

2 RULES AND REGULATIONS			
2.1	**Reports**		
2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*

Figure 8: Clear indication of mandatory and optional content

8.6.4 References

Whenever an objective or its content refers to ICAO Standards and Recommended Practices, users shall take care to use the most recent version of the referenced document/s, or its parts.

If an objective or its content is governed by National regulations or practices which differ from ICAO, the National regulations may be taught instead of ICAO and, as appropriate, applied practically to ensure pedagogical consistency with further unit training. This difference shall be notified to the learner, and when practicable, should be explained.

8.7 *Repeated and common objectives*

Repeated and common objectives are only applicable to Rating Training syllabi.

To the right of each objective there is an indication of which other ratings contain this particular objective. This indication is the first step to help the training providers in identifying the potential commonalities between the various syllabi. As a second step, the training provider must determine, at the level of local implementation, whether the objective is to be regarded as repeated or common.

2 COMMUNICATION				
2.1	**Effective Communication**			
2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual; Standards words and phrases as contained in ICAO Annex 10 Vol. 2*	APP ACP APS ACS
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL

Figure 9: Indication of the ratings that particular objective applies to.

8.7.1 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 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 able to use approved phraseology for en-route traffic will need additional training before mastering the phraseology in the provision of aerodrome control).

8.7.2 Common Objectives

Common objectives are verbatim the same objectives that appear in more than one 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.

8.8 *Performance objective*

The scope of this specification is limited to general objectives and objectives related to sub-topics, however it is necessary, at some point, to assess if a learner has achieved the objectives defined in the training. This may be done through the setting of and assessment of performance objectives in the training plans.

Performance objective: A clear and unambiguous statement of what a learner is expected to do (behaviour or **Performance**) with the minimum level of acceptable performance (**Standard** in terms of quality, quantity and time allowed for completion) and conditions under which the performance is to be carried out (**Conditions**). The performance objective clearly establishes a link between the training objective and the method to assess if this training objective has been reached.

8.9 *Linguistic knowledge*

Language proficiency is a prerequisite to licensing included in ICAO Annex 1. The Directive 2006/23/EC on a community air traffic controller licence specifies that initial training will cover the subject linguistic knowledge. However, all training objectives proper to linguistic knowledge and competence are not included in the syllabus.

The reason is that the training need was considered as explicitly described by the language proficiency to be finally achieved: at the end of the initial training, a student has to demonstrate an adequate level (level 4) of linguistic proficiency to obtain a student air traffic controller licence.

Further information on the subject may be found in the documents quoted in the References.

Page intentionally left blank

REFERENCES

- THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION: DIRECTIVE 2006/23/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 April 2006 on a Community air traffic controller licence
- EUROCONTROL Safety Regulation Commission (SRC) (2002a). EUROCONTROL Safety Regulatory Requirements (ESARR) – ESARR5: Safety Regulatory Requirement for ATM Services' Personnel.. Ed. 2.0. Brussels: EUROCONTROL.
- Human Resources Team (1996a) – HF1. Model for Task and Job Descriptions of Air Traffic Controllers. HUM.ET1.ST01.1000-REP-01. Ed. 1.0. Released Issue. Brussels: EUROCONTROL.
- EATCHIP Human Resources Team (1996a) – HF1. Model for Task and Job Descriptions of Air Traffic Controllers. HUM.ET1.ST01.1000-REP-01. Ed. 1.0. Released Issue. Brussels: EUROCONTROL.
- EATCHIP Human Resources Team (1996b) – HF2. Guidelines for Developing and Implementing Team Resource Management. HUM.ET1.ST10.1000-GUI-01. Ed. 1.0. Released Issue. Brussels: EUROCONTROL.
- EATCHIP Human Resources Team (1996c) – HF4. Human Factors Module - Stress. HUM.ET1.ST13.2000-REP-01. Ed. 1.0. Released Issue. Brussels: EUROCONTROL.
- EATCHIP Human Resources Team (1997) – HF9. Human Factors Module - Critical Incident Stress Management. HUM.ET1.ST13.3000-REP-01. Ed. 1.0. Released Issue. Brussels: EUROCONTROL.
- EATMP Human Resources Team (2000) – T16. Specifications on Training Methods and Tools. HRS/TSP-006-GUI-01. Ed.1.0. Released Issue. Brussels: EUROCONTROL.
- EATM Human Resources Team (2003a) – T11. Guidelines for Controller Training in the Handling of Unusual/Emergency Situations HRS/TSP-004-GUI-05. Ed. 2.0. Released Issue. Brussels: EUROCONTROL.
- EATM Human Resources Team (2004a) – L1. European Manual of Personnel Licensing - Air Traffic Controllers. HUM.ET1.ST08.10.000-STD-01 Ed. 2.0. Released Issue. Brussels: EUROCONTROL.
- EATM Human Resources Team (2004b) – T38. EATM Training Progression and Concepts. HRS/TSP-006-GUI-07. Ed. 1.0. Released Issue. Brussels: EUROCONTROL.
- EUROCONTROL ATM2000+ Strategy – Ed. 2003 Volume 1 and Volume 2 Released Issue. Brussels: EUROCONTROL.
- EUROCONTROL Safety Regulation Commission (SRC) (2004). EUROCONTROL Safety Regulatory Requirements (ESARR) – ESARR1: Safety Oversight in ATM.. Ed. 1.0. Brussels: EUROCONTROL.
- EUROCONTROL Safety Regulation Commission (SRC) (2002). EUROCONTROL Safety Regulatory Requirements (ESARR) – ESARR2: Reporting and Assessment of Safety Occurrences in ATM. Ed. 2.0. Brussels: EUROCONTROL.
- EUROCONTROL Safety Regulation Commission (SRC) (2000a). EUROCONTROL Safety Regulatory Requirements (ESARR) – ESARR3: Use of Safety Management Systems by ATM Service Providers.. Ed. 1.0. Brussels: EUROCONTROL.

- EUROCONTROL Safety Regulation Commission (SRC) (2001a). EUROCONTROL Safety Regulatory Requirements (ESARR) – ESARR4: Risk Assessment and Mitigation in ATM.. Ed. 1.0. Brussels: EUROCONTROL.
- EUROCONTROL Safety Regulation Commission (SRC) (2000b). Decision° 84 of the Permanent Commission adopting the EUROCONTROL Safety Regulatory Requirement ESARR3. Ed. 1.0. Brussels: EUROCONTROL.
- Hopkin, V.D. (1995). Human Factors in Air Traffic Control. ISBN 074840357. London: Taylor & Francis.
- ICAO Annex 1 (2006). Personnel Licensing. 10th Ed.
- ICAO Annex 2 (2005). Rules of the Air. 10th Ed.
- ICAO Annex 3 (2007). Meteorological Service for International Air Navigation. 16th Ed.
- ICAO Annex 5 (1979). Units of Measurement to be Used in Air and Ground Operations. 4th Ed.
- ICAO Annex 10. Aeronautical Telecommunications. Vol. I 6th Ed. 2006; Vol. II 6th Ed. 2001.
- ICAO Annex 11 (2001). Air Traffic Services. 13th Ed.
- ICAO Annex 12 (2004). Search and Rescue. 8th Ed.
- ICAO Annex 13 (2001). Aircraft Accident Investigation. 9th Ed.
- ICAO Annex 14. Aerodromes. Vol. I 4th Ed. 2004; Vol. II 2nd Ed. 1995.
- ICAO Annex 15 (2004). Aeronautical Information Services. 12th Ed.
- ICAO Doc 4444 (2007). Air Traffic Management. 15th Ed.
- ICAO Doc 7030 (1987). Regional Supplementary Procedures. 4th Ed. and Amendment 211 (June2006) incl.
- ICAO Doc 7910 (2004). Location Indicators. 111th Ed.
- ICAO Doc 8168 (2006). Aircraft Operations. 5th Ed. Vol. I & II.
- ICAO Doc 8400 (2007). ICAO Abbreviations and Codes. 7th Ed.
- ICAO Doc 8585 (2004). Designators for Aircraft Operating Agencies. 127th Ed.
- ICAO Doc 8643 (2007). Aircraft Type Designators. 35th Ed.
- ICAO Doc 9161 (2007). Manual of Air Navigation Services Economics. 4th Ed.
- ICAO Doc 9432 (2007). Manual of Radiotelephony. 3rd Ed.
- ICAO Doc 9835 (2004). Manual on the Implementation of ICAO Language Proficiency Requirements. 1st Ed.
- ICAO Doc 9713 (2007). International Civil Aviation Vocabulary. Vol. I & II.
- ICAO Doc 9683 (1998). Human Factors Training Manual. 1st Ed.
- ICAO Doc 9863 (2005). Airborne Collision Avoidance System (ACS) Manual. 1st Ed.
- Isaac, A., with Ruitenberg, B. (1999). Air Traffic Control - Human Performance Factors. Aldershot: Ashgate.

ABBREVIATIONS

For purposes of this document, the following abbreviations and acronyms shall apply:

ACC	Area Control Centre
ACP	Area Control Procedural
ACS	Area Control Surveillance
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual
APP	Approach Control (Procedural)
APS	Approach Control Surveillance
ATC	Air Traffic Control
ATCO	Air Traffic Controller / Air Traffic Control Officer
ATM	Air Traffic Management
ATS	Air Traffic Services
CCC	Common Core Content
Doc	Document
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme (later 'EATMP' and today 'EATM')
EATM(P)	European Air Traffic Management (Programme) (formerly 'EATCHIP')
ECAC	European Civil Aviation Conference
EC	European Commission
ESARR	Eurocontrol Safety Regulatory Requirement
EU	European Union
GMC	Ground Movement Control
GMS	Ground Movement Surveillance
GUI	Guidelines (EATCHIP/EATM(P))
HRS	Human Resources Programme (EATM(P))
HRT	Human Resources Team (EATCHIP/EATM(P))
IANS	EUROCONTROL Institute of Air Navigation Services (Luxembourg)
ICAO	International Civil Aviation Organization
OCN	Oceanic Control
OJT	On-the-Job Training
OJTI	On-the-Job Training Instructor
PTT	Part Task Trainer
RAD	Radar Control

SMR	Surface Movement Radar
SRA	Surveillance Radar Approach
TCL	Terminal Control
TDH Unit	Training Development and Harmonisation Unit (EUROCONTROL, IANS)
TF-CCC	Task Force Common Core Content (EATCHIP/EATM(P), HRT, TSG/TFG)
TMA	Terminal Area Control
TFG	Training Focus-Group (EATM, HRT; formerly known as ‘TSG’)
TRM	Team Resource Management
TSP	Training Sub-Programme (EATM(P), HRS)
TWR	Tower (control)

CONTRIBUTORS

ATCO COMMON CORE CONTENT TASK FORCE (ATCO CCC TF)

NAME	STATE / ORGANISATION
CHAIRMAN	
Mr. Vladimir BUBALO	EUROCONTROL IANS
MEMBERS	
Mr. Alaattin APLAK	Turkey, DHMI
Mr. Max BEZZINA	EUROCONTROL IANS
Mr. Arnold BOOY	EUROCONTROL Maastricht UAC
Ms. Chantal BOUCON	France, DSNA
Mr. Stefano CARLUCCI	Italy, Italian Air Force
Mr. David KOCHER	Switzerland, SKYGUIDE
Ms. Natascha KOCZY	EUROCONTROL Maastricht UAC
Mr. Robert DICIC	Serbia, CAD
Mr. Christian HAUSER	Austria, Austro Control
Ms. Julie SCHERER	UK, SRG
Mr. Jorgen JORGENSEN	Denmark, CAA
Mr. Knut SANNE-GUNDERSEN	Norway, Denmark and Sweden, EPN
Mr. Lubomir KOZAR	Czech Republic, ANS
Ms. Ashley LAURYSSEN	EUROCONTROL IANS
Mr. Francois LEBALLY	France, DCS/NAS
Mr. Wolfgang MERZ	Germany, DFS
Mr. Dragan MILANOVSKI	EUROCONTROL IANS
Mr. Anders NILLSON	Norway, Denmark and Sweden, EPN
Mr. Hokan NILSSON	EUROCONTROL IANS
Mr. Jean-Jacques PATACCHINI	France, ENAC
Mr. Michel PISTRE	EUROCONTROL IANS
Mr. Derek RAINEY	Switzerland, SKYGUIDE
Mr. Charles RIZZO	EUROCONTROL IANS
Mr. Gabriel VIRLAN	Romania, CAA
Secretarial assistance	
	EUROCONTROL IANS

Thanks to TRM User Group members for contribution in revising the Human Factors subject for Basic and Rating training syllabi.

Page intentionally left blank

APPENDIX 1 –The use of Action Verbs

1. Taxonomy

A taxonomy is a classification based on explicit principles. The purpose of taxonomies in the training domain is to classify training objectives.

2. The use of Action Verbs

Defining action verbs becomes increasingly difficult as the level increases for several reasons:

(i) Higher levels (4, 5 and even 3) are the culmination of many actions, and can only be described by either a breakdown into component actions or by a few high-level words, which are not exclusive to a particular level.

(ii) Making some verbs belong to several levels could compound this. This solution was rejected in order to keep things simple for the operational use (one verb - one level).

(iii) The main difference between levels 4 and 5 is novelty (qualitative) of the problem.

(iv) As each level subsumes those previous to it, as it is hierarchical, then you must naturally start running out of words.

The following list is not complete, but a guideline only. In the future ATM-specific terms known to refer to required level of performance can be added. The examples chosen to illustrate the verbs are specific to ATCO environment and are quoted from the ATCO CCC Initial Training Specification.

3. Action Verbs

3.1 *Definition of verbs – Level 1*

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

Verb	Definition	Example
Define	State what it is and what its limits are; state the definition	Define ATC service.
List	Say one after the other	List the main structure components of an aircraft.
Name	Give name of objects or procedures	Name the key national and international aviation organisations.
Recognise	To know what it is because you've 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.

3.2 *Definition of verbs – 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.

Verb	Definition	Example
Characterise	To describe the quality of features in something	Characterise the main items of ATC equipment.
Consider	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
Demonstrate	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications 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 limitations of equipment and systems.

3.3 *Definition of verbs – 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.

Verb	Definition	Example
Act	Carry out, execute	Act to reduce stress.
Apply	Use something in a situation or activity	Apply the methods of establishing identification.
Appreciate	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessary for coordination. (The learner says that the coordination will be done and with whom, he/she 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 transition levels.
Check	Make sure the information is correct (satisfactory)	Check availability of information material.
Choose	Select out of number, decide to do one thing rather than another	Choose appropriate levels.
Collect	Assemble, accumulate, bring or come together	Collect examples of different errors types, their causes and consequences in ATC.
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 distance and direction between two points.
Execute	Perform action	Execute 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 the role of ATC as a service provider and the requirements of the ATS users.
Inform	Inspire, tell	Inform supervisor of situation.

Definition of verbs – Level 3 (continued)

Verb	Definition	Example
Initiate	Begin, set going, originate	Initiate appropriate coordination.
Issue	Send forth, publish	Issue appropriate traffic information.
Maintain	Carry on, keep up, refresh	Maintain the technical integrity of the operational position.
Monitor	Keep under observation	Monitor the effect of human information processing factors on decision making.
Obtain	Acquire easily, without research	Obtain information from the relieving controller.
Operate	Conduct work on equipment	Operate the various items of equipment in the simulator.
Perform	Carry into effect, go through, execute	Perform communication effectively.
Relay	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
Respond	Make answer, perform answering or corresponding action	Respond to distress and urgency messages and signals.
Transfer	Hand over	Transfer information to receiving controller
Update	Refresh, make 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.

3.4 *Definition of verbs – Level 4*

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

Verb	Definition	Example
Allocate	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
Analyse	Examine minutely the constitution of	Analyse the information provided by the radar equipment.
Assign	Allot as a share, make over	Assign codes.
Coordinate	Bring part into proper relation	Coordinate runway in use.
Delegate	Commit authority to somebody	Delegate separation to pilots to fly maintaining own separation while in VMC.
Ensure	Make safe, make certain	Ensure the agreed course of action in carried out.
Integrate	Combine into a whole, complete by addition of parts	Integrate surface conditions into the control of aerodrome traffic.
Manage	Handle, wield, conduct	Manage traffic on the manoeuvring area.
Organise	Give orderly structure to, frame and put into working order	Organise priority of actions.
Predict	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
Provide	Supply, furnish	Provide information on aerodrome conditions.

3.5 *Definition of verbs – 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 to those previously met, requiring judgement and evaluation of options.

Verb	Definition	Example
Balance	Weigh (a question, two arguments, etc., against each other)	Balance traffic demand with the workload.
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.
Select	Pick out as best or most suitable	Select the runway in use.

ANNEX 1 –Basic syllabus

ANNEX 2 –Aerodrome Control Visual Rating syllabus

ANNEX 3 –Aerodrome Control Instrument Rating for Tower syllabus

ANNEX 4 –Approach Control Procedural Rating syllabus

ANNEX 5 –Area Control Procedural Rating syllabus

ANNEX 6 –Approach Control Surveillance Rating with Radar syllabus

ANNEX 7 –Area Control Surveillance Rating with Radar syllabus

Note: Annexes are provided as separate documents for convenience. Readers of the paper version will find them associated in the same binder with the main body of text while internet versions are published as separate electronic files.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 1
Basic syllabus

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROPEAN ORGANISATION
FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 1 BASIC Syllabus

Edition Number : **1.0**
Edition Date : **21/10/2008**
Status : **Released Issue**
Intended for : **EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 1 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the **Basic syllabus**.

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Basic phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Basic phase of Initial Training of ATCOs.

Basic training is defined ***as training designed to impart fundamental knowledge and skills to enable an ab-initio to progress to specialised ATC training***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely:

- SUBJECT 1: Introduction to the Course (INTRB)
- SUBJECT 2: Aviation Law (LAWB)
- SUBJECT 3: Air Traffic Management (ATMB)
- SUBJECT 4: Meteorology (METB)
- SUBJECT 5: Navigation (NAVB)
- SUBJECT 6: Aircraft (ACFTB)
- SUBJECT 7: Human Factors (HUMB)
- SUBJECT 8: Equipment and Systems (EQPSB)
- SUBJECT 9: Professional Environment (PENB)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **Basic training course,** training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

Learners shall:
- know and understand the training programme that they will follow and how to obtain the appropriate information,
- recognise the potential for development of their careers in ATC and
- state the rules and regulations concerning employment and security.

1	**COURSE MANAGEMENT**		
1.1	**Course Introduction**		
1.1.1	Explain the aims and main objectives of the course.	2	
1.2	**Course Administration**		
1.2.1	State course administration.	1	
1.3	**Study Material and Training Documentation**		
1.3.1	Use appropriate documentation and their sources for the course.	3	*e.g. Training documentation, library, CBT library, Web , Learning Management Server*
1.3.2	Integrate appropriate information into course studies.	4	Training documentation *e.g. supplementary information*
2	**INTRODUCTION TO THE ATC TRAINING COURSE**		
2.1	**Course Content and Organisation**		
2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
2.1.2	State the subjects of the course and their purpose.	1	
2.1.3	Describe the organisation of theoretical training.	2	
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*
2.2	**Training Ethos**		
2.2.1	Recognise the feedback mechanisms available.	1	*e.g. Instructor discussions, Training progress, Assessment, Examinations, Results, Briefing, Debriefing*
2.2.2	Describe the positive effect of working and learning together with fellow course participants.	2	Team work in theoretical and practical training
2.3	**The Assessment Process**		

2.3.1	Describe the assessment process.	2	

3 INTRODUCTION TO THE ATCO'S FUTURE

3.1 Job Prospects

3.1.1	Recognise an ATCO's working environment.	1	Area control unit, approach control unit, aerodrome control unit
3.1.2	Recognise career developments.	1	*e.g. OJT instructor, supervisor, operational managerial posts, non-operational posts*

4 CONDITIONS OF SERVICE

4.1 Current Conditions of Employment

4.1.1	Take account of administrative employment rules and regulations that apply to a student.	2	
4.1.2	Take account of administrative employment rules and regulations that apply to an ATCO as an employee.	2	
4.1.3	State the licensing/certification system.	1	

4.2 Negotiations and Policies

4.2.1	Recognise the management/staff negotiation and discussion procedures.	1	
4.2.2	Recognise the roles of trade unions, other ATC associations and professional organisations.	1	

5 SECURITY

5.1 Security

5.1.1	State the rules and regulations concerning the security at a facility and within ATC.	1	

Subject 2 : AVIATION LAW

The general objective is:

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

1	**INTRODUCTION**		
1.1	**National and International Organisations**		
1.1.1	Name the key national and international aviation organisations.	1	*e.g. ICAO, ECAC, EASA, EUROCONTROL, National Authority*
1.1.2	Describe the impact these organisations have on ATC and their interaction with each other.	2	*e.g. consistency between ESARRs and ICAO SARPs*
1.1.3	State the necessity for air law, the sources and development of aviation law.	1	*e.g. ICAO Annex 2, National Aviation Law*
1.2	**ATC Licensing/ Certification**		
1.2.1	Explain the ATC licensing/ certification process.	2	ESARR 5, Approved training courses, ATC ratings and endorsements *e.g. national documents, EC Directive on a Community air traffic controller licence*
1.2.2	Explain the privileges and limitations of controller licences.	2	*e.g. Qualification, validation, minimum experience, training and medical requirements, competence checks*
1.3	**Safety Management and Regulation**		
1.3.1	Describe the need for safety regulation.	2	ESARR 1 *e.g. SRC policy document 3, National documentation*
1.3.2	Explain how a safety management system complies with regulatory requirements.	2	ESARR 3
1.3.3	Describe the general principles of the safety organisation.	2	Safety regulation *e.g. ESARR 3, national regulations*
1.3.4	Explain the impact of safety regulation on the controller.	2	*e.g. ESARR 5, ESARR 3, EC Directive on a Community air traffic controller licence, national regulations*
1.3.5	Describe the safety assessment methodology.	2	ESARR 4 *e.g. EATMP Air navigation system safety assessment methodology*
2	**INTERNATIONAL ORGANISATIONS**		

2.1	**ICAO**		
2.1.1	Explain the purpose and function of ICAO.	2	
2.1.2	Describe the methods by which ICAO notifies and implements legislation.	2	*e.g. SARPS, PANS, ICAO Annexes, ICAO Documents, regional offices*
2.2	**Other Agencies**		
2.2.1	State the purpose and function of other international agencies and their relevance to air traffic operations.	1	*e.g. ECAC, EU, EASA, ITU, EUROCONTROL, SRC/SRU, CANSO*
2.3	**Aviation Associations**		
2.3.1	State the purpose of controller, pilot, airline and airspace user associations and their interaction with ATC.	1	*e.g. IFATCA, IFALPA, IATA, AEA, IAOPA, IACA, military services, JATMWG, ATCEUC*
3	**NATIONAL ORGANISATIONS**		
3.1	**General**		
3.1.1	Describe the purpose and function of appropriate national agencies and their relevance to air traffic operations.	2	*e.g. Civil aviation administration agencies, government agencies*
3.2	**National Legislative Procedures**		
3.2.1	Describe the methods by which legislation is implemented, notified and updated.	2	*e.g. ICAO Annex 15, AIS, AIPs, AICs, AIRAC SUP, NOTAMs, integrated aeronautical information package, national legislation, Letters of Agreement, operations manual*
3.2.2	Recognise the information contained in the different parts of the AIP.	1	
3.3	**National Regulatory Body**		
3.3.1	Name the body responsible for licensing and enforcing legislation and operational procedures.	1	
3.3.2	Describe how the regulatory body carries out its safety regulation responsibilities.	2	
3.4	**National Aviation Associations**		

3.4.1	State the purpose of national controller, pilot, airline and airspace user associations and their interaction with ATC.	1	

4 RULES AND REGULATIONS

4.1 General

4.1.1	Differentiate between the Air Navigation Services.	2	ICAO Doc 9161
4.1.2	Explain the considerations which determine the need for the ATS.	2	ICAO Annex 11
4.1.3	Differentiate between the ATS.	2	ATCS, ADVS, FIS, ALRS
4.1.4	Explain the objectives of ATS.	2	ICAO Annex 11

4.2 Airspace and ATS routes

4.2.1	Explain airspace classification.	2	ICAO Classes A-G, ICAO Annex 11
4.2.2	Differentiate between the different types of airspace.	2	*e.g. Control zones, control areas, airways, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.*
4.2.3	Differentiate between the different types of ATS routes.	2	airway, arrival route, departure route, advisory route, controlled route, uncontrolled route, etc.
4.2.4	Decode information from aeronautical charts.	3	*e.g. Control zones, control areas, ATS routes, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.*

4.3 Rules of the Air

4.3.1	Explain the Rules of the Air.	2	ICAO Annex 2
4.3.2	State any notified National differences with ICAO.	1	*e.g. ICAO Doc 7030, Supplements to ICAO Annex 2 and ICAO Annex 11*
4.3.3	Appreciate the influence of relevant flight rules on ATC.	3	General flight rules, instrument flight rules, visual flight rules
4.3.4	Appreciate the differences between flying in accordance with VFR and IFR, in VMC and IMC.	3	ICAO Annex 2
4.3.5	Explain the functions of a flight plan.	2	ICAO Doc 4444

4.3.6	Explain the different types of flight plans and associated update messages.	2	ICAO Doc 4444
4.3.7	Explain the pilot's responsibilities in relation to adherence to flight plan.	2	Inadvertent changes, Intended changes, Position reporting
4.4	**Aerodromes**		
4.4.1	Describe the general design and layout of an aerodrome.	2	Runway(s), taxiways, apron, movement area, manoeuvring area, designated positions on an aerodrome
4.4.2	Explain the numbering system and orientation of runways.	2	ICAO Annex 14
4.4.3	Differentiate between different types of aerodromes.	2	Controlled, uncontrolled. *e.g. military, international, regional*
4.4.4	Describe designated positions in the traffic circuit.	2	
4.4.5	List the factors affecting the selection of runway in use.	1	
4.5	**Holding Procedures for VFR Flights**		
4.5.1	Describe the purpose of VFR holding.	2	
4.5.2	Describe the principles of VFR holding.	2	
4.6	**Holding Procedures for IFR Flights**		
4.6.1	Describe types of holding patterns.	2	Published, Non-published, Extended
4.6.2	Describe the use of holding.	2	Effect of speed, effect of level used, effect of navigation aid in use, etc.
4.6.3	Describe the purpose of holding.	2	Traffic management, weather, ICAO Doc 4444, ICAO Doc 8168
4.6.4	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)
4.7	**Units of Measurement**		
4.7.1	Describe the units of measurement used in aviation.	2	ICAO Annex 5

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

Learners shall describe the basic principles of air traffic management and apply basic operational procedures.

1	**AIR TRAFFIC MANAGEMENT**		
1.1	**Units of Measurement**		
1.1.1	Apply the units of measurement appropriate to ATM.	3	
1.2	**Air Traffic Control Service**		
1.2.1	Define ATC service.	1	ICAO Annex 11
1.2.2	Explain the division of the ATC service.	2	ICAO Annex 11
1.2.3	Explain the responsibility for the provision of the ATC service.	2	ICAO Annex 11
1.2.4	Differentiate between the different methods of ATC service.	2	Aerodrome, surveillance, procedural
1.3	**Flight Information Service**		
1.3.1	Define FIS.	1	ICAO Annex 11
1.3.2	Describe the scope of the FIS.	2	ICAO Annex 11
1.3.3	Explain the responsibility for the provision of the FIS.	2	ICAO Doc 4444
1.3.4	State the methods of transmitting information.	1	*e.g. RTF, data link, ATIS, VOLMET, etc.*
1.3.5	Issue information to aircraft.	3	*e.g. SIGMET, serviceability of navaids, weather, flight safety information, essential traffic, essential local traffic, information related to aerodrome conditions, etc.*
1.4	**Alerting Service**		
1.4.1	Define ALRS.	1	ICAO Doc 4444
1.4.2	Describe the scope of the ALRS.	2	ICAO Annex 11
1.4.3	Explain the responsibility for the provision of the ALRS.	2	ICAO Doc 4444

1.4.4	Differentiate between the phases of emergency.	2	Uncertainty, alert, distress
1.4.5	Describe the organisation of an ALRS.	2	Responsibilities, local organisation
1.4.6	Describe the cooperation between units providing the alerting services and the SAR units.	2	
1.4.7	Differentiate between distress and urgency signals.	2	*e.g. Mayday, Pan, visual signals, etc.*
1.5	**ATS System Capacity and Air Traffic Flow Management**		
1.5.1	Define ATFM.	1	
1.5.2	State the scope of capacity management.	1	ICAO Annex 11
1.5.3	Describe the scope of ATFCM.	2	ICAO Doc 4444 *e.g.:EUROCONTROL ATFCM Users Manual*
1.5.4	Explain the responsibility for the provision of ATFCM.	2	ICAO Doc 4444 *e.g.:EUROCONTROL ATFCM Users Manual*
1.5.5	State the methods of providing ATFCM.	1	ICAO Doc 4444 *e.g.:EUROCONTROL ATFCM Users Manual*
1.6	**Airspace Management**		
1.6.1	Define ASM.	1	*e.g. EUROCONTROL ASM HBK- Airspace Management Handbook for the application of FUA*
1.6.2	Describe the scope of ASM.	2	*e.g. EUROCONTROL ASM HBK- Airspace Management Handbook for the application of FUA*
1.6.3	Explain the responsibility for the provision of ASM.	2	*e.g. EUROCONTROL ASM HBK- Airspace Management Handbook for the application of FUA*
1.6.4	State the methods of managing airspace.	1	*e.g. Flexible use of airspace, airspace design, CDRs, TSAs*
1.7	**Air Traffic Advisory Service**		
1.7.1	Define Air Traffic Advisory Service.	1	ICAO Annex 11
1.7.2	Describe the scope of the Air Traffic Advisory Service.	2	ICAO Doc 4444
1.7.3	Explain the responsibility for the provision of the Air Traffic Advisory Service.	2	ICAO Doc 4444

1.7.4	State to which flights Air Traffic Advisory Service shall be provided.	1	ICAO Doc 4444

2 RADIOTELEPHONY (RTF)

2.1 RTF General Operating Procedures

2.1.1	Explain the need for approved phraseology.	2	
2.1.2	Use approved phraseology.	3	Parts of the following documents relevant to the Basic course: ICAO Doc 4444, ICAO Doc 9432 RTF manual - standard words and phrases, ICAO Annex 10 Vol. 2
2.1.3	Perform communication effectively.	3	Communication techniques Readback/verification of readback

3 ATC CLEARANCES AND ATC INSTRUCTIONS

3.1 Type and Content of ATC Clearances

3.1.1	Define ATC clearance.	1	ICAO Annex 2
3.1.2	Describe the contents of an ATC clearance.	2	ICAO Doc 4444, ICAO Annex 11
3.1.3	Issue appropriate ATC clearances.	3	

3.2 ATC Instructions

3.2.1	Define ATC Instructions.	1	ICAO Doc 4444
3.2.2	Describe the contents of an ATC instructions.	2	ICAO Doc 4444, ICAO Annex 11
3.2.3	Issue appropriate ATC instructions.	3	

4 COORDINATION

4.1 Principles, Types and Content

4.1.1	Explain the principles, types and content of coordination.	2	ICAO Doc 4444, ICAO Annex 11 *e.g. notification, negotiation, agreement, transfer of flight data and local agreements, etc.*

4.2 Necessity

4.2.1	Appreciate the need for coordination.	3	*e.g. ICAO Doc 4444, Local agreements*

4.3 Means

4.3.1	Describe the means of coordination	2	*e.g. Data link, telephone, intercom, voice, etc.*
4.3.2	Use the available means for coordination.	3	

5 ALTIMETRY AND LEVEL ALLOCATION

5.1 Altimetry

5.1.1	Appreciate the relationship between height, altitude and flight level.	3	QFE, QNH, standard pressure

5.2 Transition Level

5.2.1	Appreciate the relationship between transition level, transition altitude and transition layer.	3	ICAO Doc 4444, ICAO Doc 8168
5.2.2	Calculate appropriate levels.	3	*e.g. Transition level , transition layer, height, lowest useable flight level, vertical distance to airspace boundaries*

5.3 Level Allocation

5.3.1	Describe the cruising level allocation system.	2	ICAO Annex 2, tables of cruising levels
5.3.2	Choose appropriate levels.	3	Flight levels, altitudes, heights

6 SEPARATIONS

6.1 Vertical Separation and Procedures

6.1.1	State the vertical separation standards and procedures.	1	ICAO Doc 4444

6.2 Horizontal Separation and Procedures

6.2.1	State the longitudinal separation standards and procedures based on time and distance.	1	ICAO Doc 4444
6.2.2	State the lateral separation standards and procedures.	1	ICAO Doc 4444

6.3 Visual Separation

6.3.1	State the occasions when clearance to fly maintaining own separation while in VMC can be used.	1	

6.4 Aerodrome Separation and Procedures

6.4.1	State the aerodrome separation standards and procedures.	1	Separation on the manoeuvring area, in the traffic circuit, for departing and arriving aircraft
6.5	**Wake Turbulence Separation**		
6.5.1	Explain the wake turbulence categories and separations.	2	ICAO Doc 4444
6.6	**Separation based on ATS surveillance systems**		
6.6.1	Explain the use of ATS surveillance systems in ATS.	2	Separation, identification, monitoring, vectoring, expedition and assistance to traffic *e.g. ICAO Doc 4444*
6.6.2	Explain the ATS surveillance systems separation standards and procedures.	2	
6.7	**Applied separation**		
6.7.1	Apply separation.	3	*e.g. vertical, longitudinal, lateral, aerodrome, based on ATS surveillance systems, distances from airspace boundaries*

7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS

7.1	**Airborne Collision Avoidance Systems**		
7.1.1	State the main characteristics of airborne warning systems and their relevance to ATC operations.	1	*e.g. ACAS, GPWS, Wind shear alerts*
7.1.2	State the function of ACAS Traffic Alerts and Resolution Advisories.	1	ICAO Doc 8168
7.1.3	List, in the correct order, the actions of the pilot following the generation of ACAS event.	1	ICAO Doc 8168
7.1.4	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444
7.1.5	List the ACAS limitations.	1	ICAO Doc 9863
7.1.6	Differentiate between ACAS advisory thresholds and ATC separation standards.	2	ICAO Doc 9863
7.2	**Ground-based Safety Nets**		
7.2.1	State the main characteristics of ground-based safety nets and their relevance to ATC operations.	1	*e.g. STCA, MSAW, APW, APM*

8 DATA DISPLAY			
8.1 Data Extraction			
8.1.1	Encode and decode an appropriate selection of standard ICAO abbreviations.	3	*e.g. ICAO Doc 8585, ICAO Doc 8643, ICAO Doc 7910*
8.1.2	Extract pertinent data from relevant sources to produce a flight progress display.	3	Pilot reports, coordination, data exchange *e.g. flight plan*
8.1.3	Describe flight plan processing.	2	*e.g. AFTN, IFPS*
8.1.4	Encode and decode flight plans (including supplementary information).	3	ICAO format, AFTN format
8.2 Data Management			
8.2.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Strip marking symbols, strip movement procedures, electronic data, radar label*

Subject 4 : METEOROLOGY

The general objective is:

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

1 INTRODUCTION			
1.1 Units of Measurement			
1.1.1	Apply the units of measurement appropriate to meteorology.	3	
1.2 Aviation and Meteorology			
1.2.1	Explain the relevance of meteorology in aviation.	2	
1.2.2	Explain the requirements for the provision of meteorological information available to operators, flight crew members, and to air traffic services.	2	ICAO Annex 3, ICAO Annex 11
1.3 Organisation of Meteorological Service			
1.3.1	Name the basic duties, organisation and working methods of meteorological offices.	1	*e.g. WAFS, WAFC, MWO, VAAC, TCAC, SADIS*
1.3.2	State the International and National standards for coordination between ATS and MET services.	1	
2 ATMOSPHERE			
2.1 Composition and Structure			
2.1.1	State the composition and structure of the atmosphere.	1	Gases, layers
2.1.2	Describe the basic characteristics of the atmospheric parameters measured.	2	Temperature, pressure, wind, humidity, density
2.1.3	List the tools used for the collection of meteorological data.	1	*e.g. Barometer, thermometer, ceilometer, anemometer, weather balloons, transmissometer, radar, satellites, etc.*
2.2 Standard Atmosphere			
2.2.1	Describe the elements of the ISA.	2	Temperature, pressure, density
2.2.2	State the reasons why the ISA has been defined.	1	

2.3	**Heat and Temperature**		
2.3.1	Define the processes by which heat is transferred and how the atmosphere is heated.	1	Radiation, convection, advection, conduction, Water Cycle
2.3.2	Describe how temperature varies.	2	Adiabatic processes, lapse rates, stability
2.4	**Water in the Atmosphere**		
2.4.1	Differentiate between the different processes related to atmospheric moisture.	2	Condensation, evaporation, sublimation, saturation
2.4.2	Characterise relative humidity, dew point and latent heat.	2	
2.5	**Air Pressure**		
2.5.1	Describe the relationship between pressure, temperature, density and height.	2	
2.5.2	Explain the relationship between pressure settings.	2	QFE, QNH, standard pressure
2.5.3	Explain the effect of air pressure and temperature on altimeter readings and the true altitude of aircraft.	2	
3	**ATMOSPHERIC CIRCULATION**		
3.1	**General Air Circulation**		
3.1.1	State the major atmospheric circulation features on the Earth.	1	*e.g. Hadley cells, high and low belts, polar fronts, westerly winds, upper level jet streams*
3.2	**Air Masses and Frontal Systems**		
3.2.1	Describe the origin and movement of typical air masses and their general effect on European weather.	2	Polar, arctic, tropical, equatorial (maritime and continental)
3.2.2	Describe the main isobaric features.	2	Cyclones, anticyclones, ridge, trough
3.2.3	Describe the difference between various fronts and the associated weather.	2	Warm front, cold front, occluded front
3.3	**Mesoscale systems**		

3.3.1	Describe the main phenomena caused by mesoscale systems.	2	Mountain waves, Föhn, Slope and valley winds, thunderstorm, squall line *e.g. land/sea breezes, tornadoes, land spouts, waterspouts*
3.3.2	State the relevance of mesoscale systems to aviation.	1	
3.4	**Wind**		
3.4.1	Explain the significance of wind phenomena and types.	2	*e.g. veering, backing, gusting, jet streams, land/sea breezes, Föhn, surface, upper*
3.4.2	State how wind is measured.	1	
3.4.3	Explain effect of forces which influence wind.	2	
4	**METEOROLOGICAL PHENOMENA**		
4.1	**Clouds**		
4.1.1	Explain the different conditions for the formation of clouds.	2	
4.1.2	Recognise different cloud types.	1	
4.1.3	State the cloud types main characteristics.	1	
4.1.4	State how the cloud base and the amount of cloud are measured and/or observed.	1	
4.1.5	Define cloud base and ceiling.	1	
4.1.6	Differentiate between cloud base and ceiling.	2	
4.2	**Types of Precipitation**		
4.2.1	Explain the significance of precipitation in aviation.	2	
4.2.2	Describe types of precipitation and their corresponding cloud families.	2	*e.g. Rain, snow, snow grains, hail, ice pellets, ice crystals, drizzle*
4.3	**Visibility**		
4.3.1	Explain the causes of atmospheric obscurity.	2	
4.3.2	Differentiate between different types of visibility.	2	Horizontal visibility, slant visibility, prevailing visibility, RVR

4.3.3	State how visibility is measured.	1	
4.3.4	Explain the significance of visibility in aviation.	2	
4.4	**Meteorological Hazards**		
4.4.1	State the meteorological hazards to aviation.	1	Turbulence, thunderstorms, icing, micro bursts, squall, macro burst, wind shear
4.4.2	Describe the effect of meteorological hazards on aviation.	2	
5	**METEOROLOGICAL INFORMATION FOR AVIATION**		
5.1	**Messages and Reports**		
5.1.1	Decode the content of weather reports and forecasts.	3	METAR, SPECI, TAF, SIGMET *e.g. local reports*

Subject 5 : NAVIGATION

The general objective is:

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

1	**INTRODUCTION**		
1.1	**Units of Measurement**		
1.1.1	Apply the units of measurement appropriate to navigation.	3	
1.2	**Purpose and Use of Navigation**		
1.2.1	Explain the need for navigation in aviation.	2	
1.2.2	Characterise navigation methods.	2	*e.g. Historical overview, celestial, on-board, radio, satellites*
2	**THE EARTH**		
2.1	**Place and Movement of the Earth**		
2.1.1	Explain the Earth's properties and their effects.	2	*e.g. Form, size, rotation, revolution in space, seasons, day, night, twilight, units of time, time zones, UTC*
2.2	**System of Coordinates, Direction and Distance**		
2.2.1	Characterise the general principles of a grid system.	2	*e.g. Degrees, minutes, seconds, WGS-84, latitude/ longitude*
2.2.2	Explain direction and distance on a globe.	2	*e.g. Great circle, small circle, rhumb line, cardinal points, inter-cardinal points*
2.2.3	Estimate position on the Earth's surface.	3	*e.g. Latitude/longitude*
2.2.4	Estimate distance and direction between two points.	3	
2.3	**Magnetism**		
2.3.1	Explain the general principles of the Earth's magnetism.	2	True north, magnetic north, variation, deviation, inclination
2.3.2	Calculate conversions between the three north designations.	3	True north, magnetic north, compass north
3	**MAPS AND AERONAUTICAL CHARTS**		
3.1	**Map Making and Projections**		
3.1.1	State how the Earth is projected to create a map.	1	Types of projection

3.1.2	Describe the properties of an ideal map.	2	*e.g. Conformality, constant scale, true azimuth, rhumb lines and great circles*
3.1.3	Explain the properties and use of different projections.	2	*e.g. Lambert, Mercator, stereographic*
3.2	**Maps and Charts Used in Aviation**		
3.2.1	Differentiate between the various maps and charts.	2	
3.2.2	State the specific use of various maps and charts.	1	
3.2.3	Decode symbols and information displayed on maps and charts.	3	
4	**NAVIGATIONAL BASICS**		
4.1	**Influence of Wind**		
4.1.1	Appreciate the influence of wind on the flight-path.	3	Heading, track, drift, wind vector
4.2	**Speed**		
4.2.1	Explain the relationship between various speeds used in aviation.	2	True air speed, ground speed, indicated air speed (including Mach number)
4.2.2	Appreciate the use of various speeds in ATC.	3	
4.3	**Visual Navigation**		
4.3.1	Explain the different methods of visual navigation.	2	map reading, visual reference *e.g. dead-reckoning*
4.4	**Navigational Aspects of Flight Planning**		
4.4.1	Describe the navigational aspects affecting flight planning.	2	*e.g. fuel / time calculations, min altitudes, alternative routes*
5	**INSTRUMENTAL NAVIGATION**		
5.1	**Ground-based Systems**		
5.1.1	Explain the basic working principles of ground-based systems.	2	VDF, NDB, VOR, DME, ILS *e.g. TACAN, MLS*
5.1.2	State the use of ground-based systems.	1	VDF, NDB, VOR, DME, ILS *e.g. TACAN, MLS*
5.1.3	Characterise the main radio navigation techniques based on ground-based systems.	2	*e.g. homing, inbound/outbound tracking, instrument approach procedures, holding, drift assessment*

5.1.4	Explain the effects of precision and limitations of ground based systems on the flight.	2	VDF, NDB, VOR, DME, ILS *e.g. TACAN, MLS*
5.2	**On-Board Systems**		
5.2.1	Explain the basic working principles of on-boards systems.	2	*e.g. INS/IRS*
5.2.2	State the use of on-board systems.	1	
5.2.3	Explain the effects of precision and limitations of on-board systems.	2	
5.3	**Satellite Based Systems**		
5.3.1	Explain the basic working principles of positioning systems.	2	*e.g. GPS, GLONASS, Galileo*
5.3.2	State the basic principles of GNSS concept.	1	Basic, ABAS, SBAS, GBAS
5.3.3	State the effects of precision and limitations of satellite-based systems.	1	*e.g. RAIM, GPS Notams*
6	**AREA NAVIGATION**		
6.1	**Principles**		
6.1.1	Explain the basic principle of area navigation.	2	
6.1.2	State the benefits of area navigation.	1	
6.2	**Types and Techniques**		
6.2.1	List the types of RNAV.	1	*e.g. B-RNAV, P-RNAV, RNP-RNAV*
6.2.2	Characterise the main navigational techniques based on area navigation.	2	*e.g. waypoints and path terminators, fly over and fly by a waypoint*
6.2.3	Characterise the navigational functions of FMS.	2	*e.g. VNAV, LNAV*
6.2.4	List the types of RNP.	1	
6.3	**Future developments**		
6.3.1	Be aware of future developments.	0	PBN, etc.

Subject 6 : AIRCRAFT

The general objective is:

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

1	**INTRODUCTION**		
1.1	**Units of Measurement**		
1.1.1	Apply the units of measurement appropriate to aircraft and principles of flight.	3	
1.2	**Aviation and Aircraft**		
1.2.1	Explain the relevance of theory of flight and aircraft characteristics in ATS operations.	2	
2	**PRINCIPLES OF FLIGHT**		
2.1	**Forces Acting on Aircraft**		
2.1.1	Explain the forces acting on an aircraft in flight and their interaction.	2	Lift, thrust, drag, weight during level flight *e.g. during climb, descent, turn*
2.1.2	Explain causes and effects of wake turbulence.	2	induced drag
2.2	**Structural Components and Control of an Aircraft**		
2.2.1	List the main structural components of an aircraft.	1	Rotary and fixed wing, tail plane, fuselage, flap, aileron, elevator, rudder, landing gear
2.2.2	Explain how the pilot controls the movements of an aircraft.	2	*e.g. rudder, aileron, elevator, throttle, rotary wing controls*
2.3	**Flight Envelope**		
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
3	**AIRCRAFT ENGINES**		
3.1	**Piston Engines**		
3.1.1	Explain the operating principles, advantages and disadvantages of the piston engine and propeller.	2	Piston engines, fixed pitch, variable pitch, number of blades
3.2	**Jet Engines**		
3.2.1	Explain the operating principles, advantages and disadvantages of the jet engine.	2	

3.2.2	List the different types of jet engines.	1	
3.3	**Turboprop Engines**		
3.3.1	Explain the operating principles, advantages and disadvantages of the turboprop engine and propeller.	2	
4	**AIRCRAFT SYSTEMS AND INSTRUMENTS**		
4.1	**Flight Instruments**		
4.1.1	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
4.1.2	Explain the impact of errors and abnormal indications of flight instruments on aircraft operations.	2	*e.g. Pitot-static failures, unreliable gyro source*
4.2	**Navigational Instruments**		
4.2.1	Describe the basic on-board operating principles and interpretation of the information displayed by navigational instruments/systems.	2	*e.g. ADF, VOR (TACAN), DME, ILS, MLS, inertial reference system, satellite based systems*
4.3	**Engine Instruments**		
4.3.1	List the vital engine monitoring parameters and their associated instruments.	1	*e.g. Oil pressure and temperature, engine temperature, rpm, fuel state and flow*
4.4	**Aircraft systems**		
4.4.1	Explain the use of the most common aircraft systems.	2	*e.g. SSR transponder, head up display, wind shear indicator, weather radar, GPWS, EFIS, Flight director, autopilot, FMS, hydraulic system, electrical system, environmental system*
4.4.2	Explain the impact of degradation/ failure of the most common aircraft systems on aircraft operations.	2	*e.g. hydraulic failure, electrical failure, environmental system failure*
5	**AIRCRAFT CATEGORIES**		
5.1	**Aircraft Categories**		
5.1.1	List the different categories of aircraft.	1	*e.g. Fixed wing, rotary wing, balloon, glider*
5.2	**Wake Turbulence Categories**		

5.2.1	List the wake turbulence categories.	1	ICAO wake turbulence categories
5.3	**ICAO Approach Categories**		
5.3.1	List the ICAO approach categories.	1	ICAO Doc 8168
6	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**		
6.1	**Take Off**		
6.1.1	Explain the factors affecting aircraft during take off.	2	Runway conditions, runway slope, wind, temperature, aerodrome elevation, aircraft mass
6.2	**Climb**		
6.2.1	Explain the factors affecting aircraft during climb.	2	Speed, mass, wind, temperature, cabin pressurisation, air density
6.3	**Cruise**		
6.3.1	Explain the factors affecting aircraft during cruise.	2	Level, cruising speed, wind, mass, cabin pressurisation
6.4	**Descent and Initial Approach**		
6.4.1	Explain the factors affecting aircraft during descent.	2	Wind, speed, rate of descent, aircraft configuration, cabin pressurisation
6.5	**Final Approach and Landing**		
6.5.1	Explain the factors affecting aircraft during final approach and landing.	2	Aircraft configuration, mass, wind, wind shear, aerodrome elevation, runway conditions, runway slope,
6.6	**Economic Factors**		
6.6.1	Explain the economic consequences of ATC changes on the flight profile of an aircraft.	2	Routing, flight level, speed, rates of climb or descent
6.7	**Ecological Factors**		
6.7.1	Explain performance restrictions due to ecological constraints.	2	*e.g. Fuel dumping, noise abatement procedures, minimum flight levels*
6.8	**Miscellaneous Factors**		
6.8.1	Explain special operational requirements which affect aircraft performance.	2	*e.g. Military flying, calibration flights, aerial photography*
7	**AIRCRAFT DATA**		
7.1	**Recognition**		

7.1.1	Recognise the most commonly used aircraft.	1	
7.2	**Performance Data**		
7.2.1	State the ICAO aircraft type designators and categories for the most commonly used aircraft.	1	Type designators, approach and wake turbulence categories
7.2.2	State the standard average performance data of the most commonly used aircraft.	1	Rate of climb/descent, cruising speed, ceiling

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall characterise factors which affect personal and team performance.

1	**INTRODUCTION TO HUMAN FACTORS**		
1.1	**Introduction**		
1.1.1	List the topics that will be covered in the course.	1	Introduction to human factors, human performance, human error, communication, work environment
1.1.2	List the reference documents used.	1	*e.g. ICAO Human Factors Training Manual, EATCHIP/EATMP publications, Air Traffic Control-Human Performance Factors, (Anne Isaac 1999), Human Factors in Air Traffic Control, (V. David Hopkin 1995)*
1.1.3	Appreciate appropriate learning techniques.	3	How the influence of interactive techniques can lead to improved learning
1.2	**Why Human Factors**		
1.2.1	Explain why human factors is a subject in this course.	2	Historical background, safety impact on ATM, licensing requirements, incidents
1.2.2	Define human factors.	1	*e.g. ICAO Human Factors Training Manual*
1.2.3	Explain the concept of systems.	2	People, procedures, equipment
1.2.4	Explain ATM in systems terms.	2	
1.2.5	Recognise the consequences of a systems failure in ATS.	1	
1.2.6	Explain the need for matching human and equipment.	2	*e.g. ICAO Human Factors Training Manual*
1.2.7	Explain the use and benefits of the SHELL model.	2	*e.g. ICAO Human Factors Training Manual, visits to the simulator and OPS room*
1.2.8	Explain the information requirement of ATC.	2	Relevant, timely, accurate
1.2.9	Describe the role of the human in the evolution of ATC.	2	*e.g. History of ATC, airspace, communications, radar, the future of ATC*
1.2.10	Recognise the importance of situational awareness for decision making.	1	
2	**HUMAN PERFORMANCE**		
2.1	**Individual Behaviour**		

2.1.1	Explain the differences and commonalities that exist between people.	2	*e.g. Attitudes, cultural, language*
2.1.2	Explain the dangers of boredom.	2	
2.1.3	Explain the dangers of overconfidence and complacency.	2	
2.1.4	Explain the dangers of fatigue.	2	Sleep disturbance, heavy workload
2.2	**Professional Conduct**		
2.2.1	Describe the need for professional standards in ATC.	2	*e.g. adherence to rules and regulations etc.*
2.2.2	Describe the needed basic professional attitudes to respond to a high level of safety.	2	*e.g. punctuality, rigour, adherence to rules, teamwork attitude*
2.2.3	Recognise the impact of responsibility on controllers action (s).	1	Responsibility as a guidance for appropriate action
2.2.4	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.)
2.3	**Health and Well Being**		
2.3.1	Consider the effect of health on performance.	2	*e.g. Fitness, diet, drugs, alcohol*
2.4	**Teamwork**		
2.4.1	Describe the differences between social human relations and professional interactions.	2	
2.4.2	Describe the different types and characters in a team.	2	*e.g. leader, follower*
2.4.3	Describe the principles of teamwork.	2	*e.g. team membership, group dynamics, advantages/ disadvantages of teamwork, conflicts and their solutions*
2.4.4	Describe leader style and group interaction.	2	
2.5	**Basic Needs of People at Work**		

2.5.1	List basic needs of people at work.	1	*e.g. Balance between: individual ability and workload, working time and rest periods. Adequate physical working conditions, positive working environment*
2.5.2	Characterise the factors of work satisfaction.	2	*e.g. money, achievement, recognition, advancement, challenge*
2.6	**Stress**		
2.6.1	Define stress.	1	Stress definition *e.g. EATCHIP Human Factors Module - Stress*
2.6.2	Recognise stress symptoms and sources.	1	Behavioural changes, lifestyle changes, physical symptoms, crisis events, main causes of stress *e.g.EATCHIP Human Factors Module - Stress*
2.6.3	Describe the stages of stress.	2	Stress performance curve *e.g. EATCHIP Human Factors Module - Stress*
2.6.4	Describe techniques for stress management.	2	*e.g. Relaxation techniques, diet and lifestyle, exercise, EATCHIP Human Factors Module - Stress*
3	**HUMAN ERROR**		
3.1	**Introduction**		
3.1.1	Recognise the dangers of error in ATC.	1	*e.g. Air Traffic Control-Human Performance Factors, (Anne Isaac 1999), Human Factors in Air Traffic Control, (V. David Hopkin 1995)*
3.2	**Definition of Human Error**		
3.2.1	Define human error.	1	
3.2.2	Describe the factors which help to cause error.	2	*e.g. fatigue, lack of skill, misunderstanding, lack of information, distraction, lack of work satisfaction*
3.3	**Classification of Human Error**		
3.3.1	State the types of errors.	1	*e.g. slips, lapses, mistakes*
3.3.2	Define violations.	1	
3.3.3	Differentiate between errors and violations of rules.	2	
3.3.4	Describe the three levels of performance according to the Rasmussen model.	2	Skill based, knowledge based, rule based
3.4	**The Reason Model**		

3.4.1	Describe the Reason model.	2	Active failures and latent conditions
3.4.2	Apply the Reason principles on error during a case study.	3	*e.g. Herald of Free Enterprise accident*
4 COMMUNICATION			
4.1 Introduction			
4.1.1	Demonstrate the importance of good communications in ATC.	2	
4.2 The Communication Process			
4.2.1	Define communication.	1	
4.2.2	Define the communication process.	1	*e.g. Sender, encoder, transmitter, signal, interference, reception, decoder, receiver, feedback*
4.3 Communication Modes			
4.3.1	Describe the factors which affect verbal communication.	2	*e.g. word choice, intonation, speed, tone, distortion, load, expectation, noise, interruption, language knowledge (i.e. accent, dialect, vocabulary)*
4.3.2	Describe the factors which affect non-verbal communication.	2	*e.g. touch, choice, expectation, noise, interruption*
4.3.3	Apply good communication practices.	3	Speaking and listening
5 THE WORK ENVIRONMENT			
5.1 Introduction			
5.1.1	Define ergonomics.	1	
5.1.2	Be aware of the need for good building design.	0	*e.g. light, insulation, decor, space, facilities*
5.1.3	Explain the need for good work position design.	2	*e.g. anthropometry (seating, work station design, input device, etc.)*
5.2 Equipment and Tools			
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
5.3 Automation			

5.3.1	Explain the reasons for automation.	2
5.3.2	Describe the constraints of automation.	2

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:
i. explain the basic working principles of equipment that is in general use in ATC;
ii. appreciate how this equipment aids the controller in providing a safe and efficient ATS

1	**GENERAL**		
1.1	**ATC Equipment**		
1.1.1	Characterise the main items of ATC equipment.	2	*e.g. Communication equipment, VDF/UDF, radars*
2	**RADIO**		
2.1	**Radio Theory**		
2.1.1	State principles of radio.	1	
2.1.2	Recognise the characteristics of radio waves.	1	Propagation, limitations
2.1.3	State the use, characteristics and limitations of frequency bands.	1	Use in ATC, navigation and communications, use and application in the Aeronautical Mobile Service, HF, VHF, UHF
2.2	**Radio Communications**		
2.2.1	State the use of the radio in ATC.	1	
2.2.2	Describe the working principles of a transmitting and receiving system.	2	
2.2.3	Explain the effect of antenna shadowing on RTF communications.	2	
2.3	**Direction Finding**		
2.3.1	State the principles and use of VDF/UDF.	1	VDF/UDF, QDM, QDR, QTF
2.3.2	State the precision of VDF/UDF used in the State system.	1	
3	**OTHER SYSTEMS AND COMMUNICATIONS**		
3.1	**ATC Communications**		
3.1.1	Describe the use of other voice communications in ATC.	2	*e.g. telephone, interphone, intercom*
3.2	**Airline Communications**		

3.2.1	State the use of SELCAL.	1	
3.3	**Air Ground Communications**		
3.3.1	State the use of controller pilot datalink communications (CPDLC).	1	
4	**RADAR**		
4.1	**General**		
4.1.1	State the principles of radar.	1	
4.1.2	Recognise the characteristics of radar wavelengths.	1	
4.1.3	Recognise the use, characteristics and limitations of different radar types.	1	*e.g. frequency bands, long and short-range radar, weather radar, high-resolution radar*
4.2	**Primary Radar**		
4.2.1	Explain the working principles of PSR.	2	
4.3	**Secondary Radar**		
4.3.1	Explain the working principles of SSR.	2	Mode A, Mode C
4.3.2	Explain SSR code management	2	Discrete, non-discrete codes, special codes
4.3.3	Explain the effect of antenna shadowing on SSR operation.	2	
4.4	**Use of Radars**		
4.4.1	Explain the use of PSR/SSR in ATC.	2	Area, approach, aerodrome, surface movement radar, DFTI
4.4.2	Explain the link between PSR/SSR with automated systems.	2	
4.4.3	Explain the advantages and disadvantages of PSR/SSR.	2	
4.5	**Mode S**		
4.5.1	State the principles of Mode S.	1	
4.5.2	Explain the use of Mode S in ATC systems.	2	
5	**AUTOMATIC DEPENDENT SURVEILLANCE**		

5.1	**Automatic Dependent Surveillance**		
5.1.1	State the working principles of ADS.	1	Satellites, data links
5.1.2	Explain the use and limitations of ADS.	2	
6	**FUTURE EQUIPMENT**		
6.1	**Future Equipment**		
6.1.1	Be aware of developments in the equipment field.	0	Equipment to be introduced beyond training period
7	**AUTOMATION IN ATS**		
7.1	**General**		
7.1.1	Describe the principles of automation in communication and datalinks in ATS.	2	
7.2	**Aeronautical Fixed Telecommunication Network**		
7.2.1	Describe the principles of AFTN.	2	
7.3	**On-line Data Interchange**		
7.3.1	Recognise the benefits of automatic exchange of ATS data in coordination and transfer processes.	1	Accuracy, speed and safety, non-verbal communications
7.3.2	Recognise the limitations of automatic exchange of ATS data in coordination.	1	Non-recognition of a systems failure
7.4	**Closed Circuit Information System**		
7.4.1	State the principles of CCIS.	1	
7.4.2	Explain the use of CCIS in ATS.	2	Data carried on CCIS
7.5	**Systems Used for the Automatic Dissemination of Information**		
7.5.1	State the working principles of broadcasting systems.	1	*e.g. ATIS, VOLMET*
7.5.2	Explain the use of ATIS and VOLMET in ATS.	2	
8	**WORKING POSITIONS**		
8.1	**General**		

8.1.1	Recognise equipment in a working position.	1	*e.g. FPB, radio, telephone and other communication equipment, relevant maps and charts, strip printer, teleprinter, clock, information monitors, radars/displays*
8.2	**Aerodrome Control**		
8.2.1	Recognise equipment to be found specifically in a TWR.	1	*e.g. Wind indicator, DFTI, SMR, crash alarm, signalling lamp, lighting control panel, runway-in-use indicator, binoculars, signalling/flare gun, IRVR and altimeter setting indicators, CCIS*
8.3	**Approach Control**		
8.3.1	Recognise equipment to be found specifically in an APP.	1	*e.g. Sequencing system, PAR, RVR indicators*
8.4	**Area Control**		
8.4.1	Recognise equipment to be found specifically in an ACC.	1	

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1	**FAMILIARISATION**		
1.1	**Familiarisation**		
1.1.1	Recognise civil and military ATS facilities.	1	*e.g. TWR, APP, ACC, AIS, RCC, Radar, Air Defence Unit*
1.1.2	Recognise airport facilities and local operators.	1	*e.g. fire and emergency services, airline operations office*
2	**AIRSPACE USERS**		
2.1	**Civil Aviation**		
2.1.1	Name airspace requirements for civil aircraft.	1	*e.g. Commercial flying, recreational flying, gliders, balloons*
2.2	**Military Aviation**		
2.2.1	Name airspace requirements for military aircraft.	1	*e.g. Low-level flying, in-flight refuelling, test flights, special military operations*
2.3	**Expectations and Requirements of Pilots**		
2.3.1	Be aware of the expectations and requirements of pilots.	0	
3	**CUSTOMER RELATIONS**		
3.1	**Customer Relations**		
3.1.1	State the role of ATC as a service provider.	1	
3.1.2	Recognise the means by which ATC is funded.	1	
4	**ENVIRONMENTAL PROTECTION**		
4.1	**Environmental Protection**		
4.1.1	Recognise the importance of environmental protection.	1	Air, water, noise

Page intentionally left blank.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 2
Aerodrome Control Visual Rating syllabus - ADV

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 2
Aerodrome Control Visual Rating syllabus
ADV

Edition Number	**:**	**1.0**
Edition Date	**:**	**21/10/2008**
Status	**:**	**Released Issue**
Intended for	**:**	**EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 2 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the **Aerodrome Control Visual Rating syllabus**.

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Rating phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Rating phase of Initial Training of ATCOs.

Rating training is defined as ***specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely -

- SUBJECT 1: Introduction to the Course (INTR)
- SUBJECT 2: Aviation Law (LAW)
- SUBJECT 3: Air Traffic Management (ATM)
- SUBJECT 4: Meteorology (MET)
- SUBJECT 5: Navigation (NAV)
- SUBJECT 6: Aircraft (ACFT)
- SUBJECT 7: Human Factors (HUM)
- SUBJECT 8: Equipment and Systems (EQPS)
- SUBJECT 9: Professional Environment (PEN)
- SUBJECT 10: Unusual/Degraded/Emergency Situations (UDES)
- SUBJECT 11: Aerodromes (AGA)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **ADV training course**, training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1 COURSE MANAGEMENT				
1.1 Course Introduction				
1.1.1	Explain the aims and main objectives of the course.	2		ALL
1.2 Course Administration				
1.2.1	State course administration.	1		ALL
1.3 Study Material and Training Documentation				
1.3.1	Use appropriate documentation and their sources for course studies.	3	*e.g. Training documentation, library, CBT library, Web, Learning Management Server*	ALL
1.3.2	Integrate appropriate information into course studies.	4	*e.g. Training documentation, supplementary information, library*	ALL
2 INTRODUCTION TO THE ATC TRAINING COURSE				
2.1 Course Content and Organisation				
2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study	ALL
2.1.2	State the subjects of the course and their purpose.	1		ALL
2.1.3	Describe the organisation of theoretical training.	2		ALL
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*	ALL
2.2 Training Ethos				
2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL
2.3 The Assessment Process				
2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

i. know, understand and apply the Rules of the Air and the Regulations regarding reporting, airspace and
ii. appreciate the Licensing and Competence principles.

1 ATC LICENSING / CERTIFICATE OF COMPETENCE

1.1 Privileges and Conditions

1.1.1	Appreciate the conditions which must be met for the issue of Aerodrome Control Visual rating.	3	EU Community air traffic controller licence Directive, ESARR5 rating, valid rating *e.g. National documents, European Manual of Personnel Licensing - Air Traffic Controllers*	ADV
1.1.2	Explain the conditions for suspension/revocation of ATCO license.	2	Incident/Accident, Competence in doubt, Medical	ALL

2 RULES AND REGULATIONS

2.1 Reports

2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*	ALL
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*	ALL
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*	ALL

2.2 Airspace

2.2.1	Appreciate classes and structure of airspace and their relevance to Aerodrome Control Visual rating operations.	3		ADV
2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*e.g. ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation*	ALL
2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1	**AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT**			
1.1	**Aerodrome Control Service**			
1.1.1	Describe specific areas of responsibility of aerodrome control.	2	ICAO Annex 11	ADV ADI
1.1.2	Appreciate areas of responsibility.	3	Control Zone, Traffic Circuit, Manoeuvring Area, Movement Area, Vicinity *e.g. ATZ*	ADV ADI
1.1.3	Provide the appropriate aerodrome control service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals	ADV ADI
1.2	**Flight Information Service (FIS)**			
1.2.1	Describe the information that shall be passed to aircraft by an aerodrome controller.	2	ICAO Annex 11	ADV ADI
1.2.2	Provide FIS.	4	ICAO Doc 4444	ALL
1.2.3	Issue appropriate traffic information.	3	ICAO Doc 4444	ADV ADI
1.3	**Alerting Service (ALRS)**			
1.3.1	Provide ALRS.	4	ICAO Doc 4444	ALL
1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10 ICAO Doc 4444	ALL
1.4	**ATS System Capacity and Air Traffic Flow Management**			
1.4.1	Appreciate principles of ATFCM.	3	*e.g. Working principles of ATFCM, CFMU, Slot management, Slot allocation procedures*	ADV ADI
1.4.2	Organise traffic to take account of flow management.	4	*e.g. departure sequence*	ADV ADI
1.4.3	Inform appropriate authority.	3	*e.g. Abnormal situations, Decrease in sector capacity, Limitations on systems and equipment, Changes in workload/capacity, Relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), Unusual meteorological conditions*	ADV ADI
2	**COMMUNICATION**			
2.1	**Effective Communication**			

2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
3.1	**ATC Clearances**			
3.1.1	Issue appropriate ATC clearances.	3		ALL
3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
3.1.3	Ensure the agreed course of action is carried out.	4		ALL
3.2	**ATC Instructions**			
3.2.1	Issue appropriate ATC instructions.	3		ALL
3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
3.2.3	Ensure the agreed course of action is carried out.	4		ALL
4	**COORDINATION**			
4.1	**Necessity**			
4.1.1	Identify the need for coordination.	3		ALL
4.2	**Tools and Methods**			
4.2.1	Use the available tools for coordination.	3	*e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination*	ALL
4.3	**Coordination Procedures**			
4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *e.g. release point*	ALL
4.3.2	Analyse effect of coordination requested by an adjacent position/ unit.	4	*e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL

4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit , When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
5	**ALTIMETRY AND LEVEL ALLOCATION**			
5.1	**Altimetry**			
5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.2	Ensure separation according to altimetry data.	4	*e.g. Transition level , transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
6	**SEPARATIONS**			
6.1	**Separation between departing aircraft**			
6.1.1	Provide separation between departing aircraft.	4	ICAO Doc 4444	ADV ADI
6.2	**Separation of landing aircraft and preceding landing or departing aircraft**			
6.2.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	ICAO Doc 4444	ADV
6.3	**Wake turbulence longitudinal separation**			
6.3.1	Provide time-based wake turbulence separation.	4	ICAO Doc 4444	ADV
6.4	**Reduced separation minima**			
6.4.1	Provide reduced separation minima.	4	ICAO Doc 4444	ADV
7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
7.1	**Airborne Collision Avoidance Systems**			
7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, GPWS	ADV ADI
7.1	**Ground-based Safety Nets**			
7.2.1	Respond to available ground-based safety nets warnings.	3	*e.g. Anti-incursion*	ADV ADI

8 DATA DISPLAY

8.1 Data Management

8.1.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
8.1.2	Analyse pertinent data on data displays.	4		ALL
8.1.3	Organise pertinent data on data displays.	4		ALL
8.1.4	Process pertinent data on data displays.	3		ALL
8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information *e.g. RPL, AFIL etc.*	ALL
8.1.6	Use flight plan information.	3		ALL

9 OPERATIONAL ENVIRONMENT

9.1 Integrity of the Operational Environment

9.1.1	Obtain information concerning the operational environment.	3	*e.g. Briefing, notices, local orders, verification of information*	ALL
9.1.2	Ensure the integrity of the operational environment.	4	*e.g. Frequency, VOLMET, ATIS, SIGMET, Systems set-up, Integrity of displays*	ADV ADI

9.2 Verification of the Currency of Operational Procedures

9.2.1	Check all relevant documentation before managing traffic.	3	*e.g. Briefing, LOAs, NOTAM, AICs*	ALL

9.3 Handover - Takeover

9.3.1	Transfer information to the relieving controller.	3		ALL
9.3.2	Obtain information from the controller handing-over.	3		ALL

10 PROVISION OF AN AERODROME CONTROL SERVICE

10.1 General

10.1.1	Explain the responsibility for the provision of an aerodrome control service.	2	ICAO Doc 4444, ICAO Annex 11	ADV ADI
10.1.2	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	ADV ADI
10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444	ADV ADI

10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	ADV ADI
10.2 Functions of Aerodrome Control Tower				
10.2.1	Manage the general functions of aerodrome control.	4	ICAO Doc 4444	ADV ADI
10.2.2	Manage the suspension of VFR operations.	4	ICAO Doc 4444	ADV ADI
10.3 Aeronautical Ground Lights				
10.3.1	Select appropriate aeronautical ground lights.	5	ICAO Doc 4444	ADV ADI
10.4 Information to Aircraft by Aerodrome Control Tower				
10.4.1	Provide information related to the operation of aircraft.	4	ICAO Doc 4444	ADV ADI
10.4.2	Provide information on aerodrome conditions.	4	ICAO Doc 4444	ADV ADI
10.5 Control of Aerodrome Traffic				
10.5.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	ICAO Doc 4444	ADV ADI
10.5.2	Manage traffic on the manoeuvring area.	4	ICAO Doc 4444 Aircraft, vehicles *e.g. runway inspection*	ADV ADI
10.5.3	Manage traffic in accordance with procedural changes.	4	*e.g. Taxiway closure*	ADV ADI
10.5.4	Ensure an adequate priority of actions.	4	Formal and situational requirements, Workload	ADV ADI
10.6 Control of traffic in the Traffic Circuit				
10.6.1	Manage traffic in the traffic circuit.	4	ICAO Doc 4444 Meteorological phenomena, Geographical knowledge, Environmental factors	ADV ADI
10.6.2	Manage arriving and departing traffic.	4	ICAO Doc 4444, Allocation of the order of priority, Meteorological phenomena, Wake turbulence, Environmental factors	ADV ADI
10.6.3	Integrate the serviceability of radio aids in the management of aerodrome traffic.	4	*e.g. UDF, VDF, MLS, ILS, NDB, VOR, DME*	ADV ADI
10.6.4	Integrate surface conditions into the control of aerodrome traffic.	4	*e.g. Damp, Wet, Water patches, Flooding, Snow, Slush, Ice, Braking action*	ADV ADI
10.6.5	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	*e.g. Clouds, Precipitation, Visibility, Wind, Meteorological hazards*	ADV ADI

10.6.6	Integrate the information provided by situation displays.	4	Use, Advantages, Disadvantages	ADV ADI
10.7 Runway in use				
10.7.1	Select the runway in use.	5	ICAO Doc 4444	ADV ADI
10.7.2	Coordinate runway in use.	4	*e.g. Approach control, Area control, runway selection, change of runway*	ADV ADI
10.7.3	Manage traffic in the event of runway-in-use change.	4		ADV ADI

Subject 4 : METEOROLOGY

The general objective is:

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

1 METEOROLOGICAL PHENOMENA

1.1 Meteorological Phenomena

1.1.1	Appreciate the impact of different cloud types.	3	Cumulus, Cumulonimbus *e.g. Stratus, Nimbostratus, etc.*	ADV ADI
1.1.2	Appreciate the impact of precipitation.	3	Precipitation and Microphysics *e.g. Rain, Snow, Sleet, Hail*	ADV ADI
1.1.3	Appreciate the impact of atmospheric obscurity.	3	*e.g. Advection fog, Radiation fog, Mixing, Evaporation, Mist, Drizzle*	ADV ADI
1.1.4	Appreciate the effect and impact of wind.	3	Gusting, Veering, Backing *e.g. Land breezes, Sea breezes, Fohn*	ADV ADI
1.1.5	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Windshear, Turbulence, Thunderstorms, Icing, Microbursts	ADV ADI
1.1.6	Appreciate the effect of a frontal system on aerodrome operations.	3		ADV ADI

2 SOURCES OF METEOROLOGICAL DATA

2.1 Meteorological Instruments

2.1.1	Extract information from meteorological instruments.	3	*e.g. Anemometer, RVR indicator, Cloud base indicator, Barometer*	ADV ADI

2.2 Other Sources

2.2.1	Decode information from meteorological data displays.	3		ADV ADI
2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3		ADV ADI
2.2.3	Relay meteorological information from pilot reports.	3	ICAO Doc 4444	ADV ADI

Subject 5 : NAVIGATION

The general objective is:

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

1	**MAPS AND AERONAUTICAL CHARTS**			
1.1	**Maps and Charts**			
1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Visual approach charts, Instrument approach charts, Aerodrome charts *e.g. Military maps and charts*	ADV ADI
1.1.2	Use relevant maps and charts.	3	Visual approach/departure charts, Aerodrome charts *e.g. Military maps and charts*	ADV
2	**INSTRUMENTAL NAVIGATION**			
2.1	**Navigational Systems**			
2.1.1	Describe the possible operational status of navigational systems.	2	*e.g. NDB, VOR, DME*	ADV
2.1.2	Decode operational status displays of navigational systems.	3	*e.g. NDB, VOR, DME*	ADV
2.1.3	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3		ADV ADI
2.1.4	Manage traffic in case of change in the operational status of navigational systems.	4	*e.g. limitations, status of ground based systems*	ADV ADI

Subject 6 : AIRCRAFT

The general objective is:

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

1 AIRCRAFT INSTRUMENTS				
1.1 Aircraft Instruments				
1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	*e.g. TCAS, wind shear indicator, weather radar*	ALL
1.1.2	Explain the operation of aircraft radio equipment.	2	*e.g. Radios (number of), emergency radios, SELCAL*	ALL
1.1.3	Explain the operation of transponder equipment.	2	Transponders: equipment Mode A, Mode C, Mode S	ALL
1.1.4	Explain the use and benefits of CPDLC.	2		ALL
2 AIRCRAFT CATEGORIES				
2.1 Wake Turbulence Categories				
2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
3 FACTORS AFFECTING AIRCRAFT PERFORMANCE				
3.1 Takeoff				
3.1.1	Integrate the influence of factors affecting aircraft on takeoff.	4	*e.g. Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass*	ADV ADI
3.2 Climb				
3.2.1	Appreciate the influence of factors affecting aircraft during climb.	3	*e.g. speed, mass, air density, wind and temperature*	ADV ADI
3.3 Final Approach and Landing				
3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*e.g. wind, aircraft configuration, mass, runway conditions, runway slope, aerodrome elevation*	ADV ADI
3.4 Economic Factors				
3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*e.g. Starting-up, Taxiing, Routing, Departure sequence*	ADV ADI
3.5 Miscellaneous Factors				

3.5.1	Appreciate the influence of operational requirements.	3	*e.g. Military flying, Calibration flights, Aerial photography*	ADV ADI ACP ACS
3.6	**Ecological Factors**			
3.6.1	Estimate the influence of ecological factors affecting aircraft.	3	*e.g. Noise abatement procedures, Minimum flight altitudes, Bird hazard*	ADV ADI
4	**AIRCRAFT DATA**			
4.1	**Recognition of Aircraft Types**			
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 *e.g. ICAO Approach Categories*	ADV ADI
4.2	**Performance Data**			
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 a control service.	4	Performance data under a representative variety of circumstances	ADV ADI
4.2.2	Identify potential or actual emergency situations.	3		ADV ADI

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

i. recognise the necessity to constantly extend their knowledge;
ii. analyse factors which affect personal and team performance.

1	**PSYCHOLOGICAL FACTORS**			
1.1	**Cognitive**			
1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
1.1.3	Monitor the effect of human information processing factors on decision making.	3	*e.g. workload, stress, interpersonal relations, distraction, confidence*	ALL
2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
2.1	**Fatigue**			
2.1.1	State factors that cause fatigue.	1	Shift work *e.g. night shifts and rosters*	ALL
2.1.2	Describe the onset of fatigue.	2	*e.g. Lack of concentration, Listlessness, Irritability, Frustration*	ALL
2.1.3	Recognise the onset of fatigue in self.	1		ALL
2.1.4	Recognise the onset of fatigue in others.	1		ALL
2.1.5	Consider appropriate action when recognising fatigue.	2		ALL
2.2	**Fitness**			
2.2.1	Recognise signs of lack of personal fitness.	1		ALL
2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
3	**SOCIAL AND ORGANISATIONAL FACTORS**			
3.1	**Team Resource Management (TRM)**			
3.1.1	State the objectives of TRM.	1	*e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
3.1.2	State the content of the TRM concept.	1	*e.g. team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL

3.2	**Teamwork and Team Roles**			
3.2.1	Identify reasons for conflict.	3		ALL
3.2.2	Describe actions to prevent human conflicts.	2	*e.g. TRM team roles*	ALL
3.2.3	Describe strategies to cope with human conflicts.	2	*e.g. in your team, in the simulator*	ALL
3.3	**Responsible behaviour**			
3.3.1	Consider the factors which influence responsible behaviour.	2	*e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
4	**STRESS**			
4.1	**Stress**			
4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
4.2	**Stress Management**			
4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
4.2.2	Obtain assistance in stressful situations.	3	*e.g. The benefits of offering,accepting and asking for help in stressful situations*	ALL
4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
4.2.5	Explain procedures used following an incident/accident.	2	*e.g. CISM, Counselling, Human element*	ALL
5	**HUMAN ERROR**			
5.1	**Human Error**			
5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
5.1.2	Differentiate between the types of error.	2	*e.g. Slips, Lapses, Mistakes*	ALL
5.1.3	Describe error-prone conditions.	2	*e.g. increase in traffic*	ALL
5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL

5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL

5.2 Violation of rules

5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2		ALL

6 WORKING METHODS

6.1 Efficiency

6.1.1	Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.	2	*e.g. Own and others workload, OJT, customer requirements, economy, ecology, safety*	ALL

7 WORKING KNOWLEDGE

7.1 Controller Knowledge

7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	*e.g. Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*	ALL

8 COLLABORATIVE WORK

8.1 Communication

8.1.1	Use communication effectively in ATC.	3		ALL

8.2 Collaborative work within the same area of responsibility

8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*e.g. Electronic, written, verbal and non-verbal communication*	ALL
8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*e.g. Strips legibility and encoding, Radar labels designation, Feedback*	ALL
8.2.3	List possible actions to provide a safe position hand over.	1	*e.g. rigour, preparation, overlap time*	ALL
8.2.4	Explain consequences of a missed position hand over process.	2		ALL

8.3 Collaborative work between different areas of responsibility

8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*e.g. Other sectors constraints, electronic coordination tools*	ALL

8.4	**Controller/Pilot Cooperation**			
8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*e.g. workload, mutual knowledge, controller vs. pilot mental picture*	ALL
9	**WORK ENVIRONMENT**			
9.1	**Ergonomics**			
9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL
10	**ATC SAFETY MANAGEMENT**			
10.1	**Experience feedback**			
10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	*e.g. voluntary reporting*	ALL
10.1.2	Describe how reported occurrences are analysed.	2	*e.g. ESARR2, local procedures*	ALL
10.1.3	Name the means used to disseminate recommendations.	1	*e.g. Safety letters, safety boards web pages*	ALL
10.1.4	Explain the "Just Culture" concept.	2	benefits, prerequisites, constraints *e.g. EAM 2 GUI 6, GAIN Report*	ALL
10.2	**Safety investigation branch**			
10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
10.2.2	Define working methods of Safety Investigation Branch.	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

i. integrate knowledge and understanding of the basic working principles of equipment and systems and
ii. comply with the equipment and system degradation procedures in the provision of ATS.

1	**VOICE COMMUNICATIONS**			
1.1	**Radio Communications**			
1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures *e.g. Frequency selection, Stand-by equipment*	ALL
1.1.2	Identify indications of operational status of radio equipment.	3	*e.g. Indicator lights, Serviceability displays, Selector/frequency displays*	ALL
1.2	**Other voice communications**			
1.2.1	Operate land line communications.	3	*e.g. telephone, interphone and intercom equipment*	ALL
2	**AUTOMATION IN ATS**			
2.1	**Aeronautical Fixed Telecommunication Network (AFTN)**			
2.1.1	Decode AFTN messages.	3	*e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
2.2	**Automatic Data Interchange**			
2.2.1	Use automatic data transfer equipment where available.	3	*e.g Sequencing systems, Automated information and coordination, OLDI*	ALL
3	**CONTROLLER WORKING POSITION**			
3.1	**General**			
3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	*e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF*	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL
3.2	**Situation displays and Information Systems**			
3.2.1	Use situation displays.	3		ALL
3.2.2	Check availability of information material.	3		ALL
3.2.3	Obtain information from equipment.	3	*e.g. information from wind direction indicator*	ADV ADI

3.2.4	Take account of anti-incursion equipment.	2		ADV ADI
3.3	**Flight Data Systems**			
3.3.1	Use the flight data information at controller working position.	3		ALL
4	**FUTURE EQUIPMENT**			
4.1	**New Developments**			
4.1.1	Recognise future developments.	1	New advanced systems	ALL
5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
5.1	**General**			
5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL
5.2	**Communication equipment degradation**			
5.2.1	Identify that communication equipment has degraded.	3	*e.g. Ground-air, ground-ground and land line communications*	ADV ADI
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	*e.g. total or partial degradation of ground-air, ground-ground and land line communications; Alternative methods of transfering data*	ADV ADI
5.3	**Navigational equipment degradation**			
5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*e.g. VOR, Navigational aids*	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	*e.g. Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*	ALL

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1	**PROFESSIONAL ENVIRONMENT**			
1.1	**Contributors to ATS operations**			
1.1.1	Characterise civil and military ATS activities.	2	*Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	*Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices*	ALL
1.2	**Customer Relations**			
1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	*e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*	ALL
1.3	**Environmental Protection**			
1.3.1	Describe processes used to ensure environmental protection.	2	*e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations*	ALL

Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

Learners shall develop professional attitudes to manage traffic in unusual, degraded and emergency situations.

1 UNUSUAL/DEGRADED/EMERGENCY SITUATIONS				
1.1 General				
1.1.1	List common unusual/degraded/ emergency situations.	1	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion*	ALL
1.1.2	Take into account the procedures for given unusual/degraded/ emergency situations.	2		ALL
1.1.3	Take into account that procedures don't exist for all unusual/ degraded/emergency situations.	2	*e.g. real life examples*	ALL
1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*e.g. Separation, Information, Coordination*	ALL
2 SKILLS IMPROVEMENT				
2.1 Communication Effectiveness				
2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Read back, Silence instruction	ALL
2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
2.2 Avoidance of mental overload				
2.2.1	Describe actions to keep the control of the situation.	2	*e.g. sector splitting, holding, flow management, task delegation*	ALL
2.2.2	Organise priority of actions.	4		ALL
2.2.3	Ensure an effective circulation of information.	4	*e.g. between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL
2.2.4	Consider asking for help.	2		ALL
2.3 Air/Ground Cooperation				
2.3.1	Collect appropriate information relevant for the situation.	3		ALL

2.3.2	Assist the pilot.	3	pilot workload *e.g. Instructions, information, support, human factors, etc.*	ALL

3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS

3.1 General

3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations* *Ambulance flights, GPWS alerts, airframe failure*	ADV APP ACP APS ACS

3.2 Radio failure

3.2.1	Describe the procedures followed by a pilot when he experiences complete or partial radio failure.	2	ICAO Doc 7030 *e.g. military procedures*	ALL
3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*e.g. Prolonged loss of communication*	ALL

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL

3.4 Strayed or Unidentified Aircraft

3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *e.g. Inside controlled airspace, Outside controlled airspace*	ALL
3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
3.4.3	Provide navigational assistance to aircraft.	4	*e.g. 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 ADI

Subject 11: AERODROMES

The general objective is:

Learners shall recognise and understand the design and layout of Aerodromes.

1 GENERAL

1.1 Definitions

1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 *e.g. AIP*	APP APS ADV ADI
1.1.2	Define aerodrome data.	1	ICAO Annex 14 *e.g. Aerodrome elevation, Reference point, Apron, Movement area, Manoeuvring area, Hot spot*	ADV ADI APP APS

1.2 Coordination

1.2.1	Identify the information that has to be passed between Air Traffic Services (ATS) and the airport authority.	3	Airport conditions, Fire/rescue category, Condition of ground equipment and NAVAIDs, AIRAC, ICAO Annex 14	APP APS ADV ADI

2 MOVEMENT AREA

2.1 Movement Area

2.1.1	Describe movement area.	2	ICAO Annex 14	ADV ADI APP APS
2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights	ADV ADI APP APS
2.1.3	Identify the information on conditions of the movement area that have to be passed to aircraft.	3	Essential information on aerodrome conditions	ADV ADI APP APS

2.2 Manoeuvring Area

2.2.1	Describe manoeuvring area.	2	ICAO Annex 14	ADV ADI APP APS
2.2.2	Describe taxiway.	2		ADV ADI APP APS
2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS

2.3 Runways

2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways	ADV ADI APP APS

2.3.2	Describe instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.3	Describe non-instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	ADV ADI APP APS
2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	ADV ADI APP APS
2.3.6	Describe the daylight markings on runways.	2	*e.g. Runway Designator, Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour*	ADV ADI APP APS
2.3.7	Describe runway lights.	2	*e.g. Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes*	ADV ADI APP APS
2.3.8	Explain the functions of visual landing aids.	2	*e.g. AVASI, VASI, PAPI*	ADV ADI APP APS
2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, Stroboscopic lights, Colours, Intensity and brightness	ADV ADI APP APS
2.3.10	Characterise the effect of water/ice on runways.	2		ADV ADI APP APS
2.3.11	Explain braking action.	2	Braking action coefficient	ADV ADI APP APS
2.3.12	Explain the effect of runway visual range on aerodrome operation	2		ADV ADI APP APS

3 OBSTACLES

3.1 General

3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS

4 MISCELLANEOUS EQUIPMENT

4.1 Location

4.1.1	Explain the location of different aerodrome ground equipment.	2	*e.g. LLZ, GLD, VDF, radiocommunication or radar antennas, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

Page intentionally left blank.

Page intentionally left blank.

Page intentionally left blank.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 3
Aerodrome Control Instrument Rating for Tower syllabus - ADI (TWR)

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 3
Aerodrome Control Instrument Rating for Tower syllabus
ADI (TWR)

Edition Number	**:**	**1.0**
Edition Date	**:**	**21/10/2008**
Status	**:**	**Released Issue**
Intended for	**:**	**EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 3 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the Aerodrome Control Instrument Rating with Tower syllabus - ADI (TWR).

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Rating phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Rating phase of Initial Training of ATCOs.

Rating training is defined as ***specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely:

- SUBJECT 1: Introduction to the Course (INTR)
- SUBJECT 2: Aviation Law (LAW)
- SUBJECT 3: Air Traffic Management (ATM)
- SUBJECT 4: Meteorology (MET)
- SUBJECT 5: Navigation (NAV)
- SUBJECT 6: Aircraft (ACFT)
- SUBJECT 7: Human Factors (HUM)
- SUBJECT 8: Equipment and Systems (EQPS)
- SUBJECT 9: Professional Environment (PEN)
- SUBJECT 10: Unusual/Degraded/Emergency Situations (UDES)
- SUBJECT 11: Aerodromes (AGA)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **ADI (TWR) training course**, training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1 COURSE MANAGEMENT				
1.1 Course Introduction				
1.1.1	Explain the aims and main objectives of the course.	2		ALL
1.2 Course Administration				
1.2.1	State course administration.	1		ALL
1.3 Study Material and Training Documentation				
1.3.1	Use appropriate documentation and their sources for course studies.	3	*e.g. Training documentation, library, CBT library, Web, Learning Management Server*	ALL
1.3.2	Integrate appropriate information into course studies.	4	*e.g. Training documentation, supplementary information, library*	ALL
2 INTRODUCTION TO THE ATC TRAINING COURSE				
2.1 Course Content and Organisation				
2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study	ALL
2.1.2	State the subjects of the course and their purpose.	1		ALL
2.1.3	Describe the organisation of theoretical training.	2		ALL
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*	ALL
2.2 Training Ethos				
2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL
2.3 The Assessment Process				
2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

i. know, understand and apply the Rules of the Air and the Regulations regarding reporting, airspace and
ii. appreciate the Licensing and Competence principles.

1 ATC LICENSING / CERTIFICATE OF COMPETENCE

1.1 Privileges and Conditions

1.1.1	Appreciate the conditions which must be met for the issue of Aerodrome Control Instrument rating with Tower Control endorsement.	3	EU Community air traffic controller licence Directive, ESARR5 rating, valid rating *e.g. National documents, European Manual of Personnel Licensing - Air Traffic Controllers*	ADI
1.1.2	Explain the conditions for suspension/revocation of ATCO license.	2	Incident/Accident, Competence in doubt, Medical	ALL

2 RULES AND REGULATIONS

2.1 Reports

2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*	ALL
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*	ALL
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*	ALL

2.2 Airspace

2.2.1	Appreciate classes and structure of airspace and their relevance to Aerodrome Control Instrument rating with Tower Control endorsement operations.	3		ADI
2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*e.g. ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation*	ALL
2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1	**AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT**			
1.1	**Aerodrome Control Service**			
1.1.1	Describe specific areas of responsibility of aerodrome control.	2	ICAO Annex 11	ADV ADI
1.1.2	Appreciate areas of responsibility.	3	Control Zone, Traffic Circuit, Manoeuvring Area, Movement Area, Vicinity *e.g. ATZ*	ADV ADI
1.1.3	Provide the appropriate aerodrome control service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals	ADV ADI
1.2	**Flight Information Service (FIS)**			
1.2.1	Describe the information that shall be passed to aircraft by an aerodrome controller.	2	ICAO Annex 11	ADV ADI
1.2.2	Provide FIS.	4	ICAO Doc 4444	ALL
1.2.3	Issue appropriate traffic information.	3	ICAO Doc 4444	ADV ADI
1.3	**Alerting Service (ALRS)**			
1.3.1	Provide ALRS.	4	ICAO Doc 4444	ALL
1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10 ICAO Doc 4444	ALL
1.4	**ATS System Capacity and Air Traffic Flow Management**			
1.4.1	Appreciate principles of ATFCM.	3	*e.g. Working principles of ATFCM, CFMU, Slot management, Slot allocation procedures*	ADV ADI
1.4.2	Organise traffic to take account of flow management.	4	*e.g. departure sequence*	ADV ADI
1.4.3	Inform appropriate authority.	3	*e.g. Abnormal situations, Decrease in sector capacity, Limitations on systems and equipment, Changes in workload/capacity, Relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), Unusual meteorological conditions*	ADV ADI
2	**COMMUNICATION**			
2.1	**Effective Communication**			

2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL

3 ATC CLEARANCES AND ATC INSTRUCTIONS

3.1 ATC Clearances

3.1.1	Issue appropriate ATC clearances.	3		ALL
3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
3.1.3	Ensure the agreed course of action is carried out.	4		ALL

3.2 ATC Instructions

3.2.1	Issue appropriate ATC instructions.	3		ALL
3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
3.2.3	Ensure the agreed course of action is carried out.	4		ALL

4 COORDINATION

4.1 Necessity

4.1.1	Identify the need for coordination.	3		ALL

4.2 Tools and Methods

4.2.1	Use the available tools for coordination.	3	*e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination*	ALL

4.3 Coordination Procedures

4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *e.g. release point*	ALL

4.3.2	Analyse effect of coordination requested by an adjacent position/ unit.	4	*e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit , When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL

5 ALTIMETRY AND LEVEL ALLOCATION

5.1 Altimetry

5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.2	Ensure separation according to altimetry data.	4	*e.g. Transition level , transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL

5.2 Terrain Clearance

5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe height and terrain clearance.	4	*e.g. Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude*	ADI

6 SEPARATIONS

6.1 Separation between departing aircraft

6.1.1	Provide separation between departing aircraft.	4	ICAO Doc 4444	ADV ADI

6.2 Separation of departing aircraft from arriving aircraft

6.2.1	Provide separation of departing aircraft from arriving aircraft.	4	ICAO Doc 4444	ADI

6.3 Separation of landing aircraft and preceding landing or departing aircraft

6.3.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	ICAO Doc 4444	ADI

6.4 Time based wake turbulence longitudinal separation

6.4.1	Provide time-based wake turbulence longitudinal separation.	4	ICAO Doc 4444	ADI

6.5	**Reduced separation minima**			
6.5.1	Provide reduced separation minima.	4	ICAO Doc 4444	ADI
7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
7.1	**Airborne Collision Avoidance Systems**			
7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, GPWS	ADV ADI
7.1	**Ground-based Safety Nets**			
7.2.1	Respond to available ground-based safety nets warnings.	3	*e.g. Anti-incursion*	ADV ADI
8	**DATA DISPLAY**			
8.1	**Data Management**			
8.1.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
8.1.2	Analyse pertinent data on data displays.	4		ALL
8.1.3	Organise pertinent data on data displays.	4		ALL
8.1.4	Process pertinent data on data displays.	3		ALL
8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information *e.g. RPL, AFIL etc.*	ALL
8.1.6	Use flight plan information.	3		ALL
9	**OPERATIONAL ENVIRONMENT**			
9.1	**Integrity of the Operational Environment**			
9.1.1	Obtain information concerning the operational environment.	3	*e.g. Briefing, notices, local orders, verification of information*	ALL
9.1.2	Ensure the integrity of the operational environment.	4	*e.g. Frequency, VOLMET, ATIS, SIGMET, Systems set-up, Integrity of displays*	ADV ADI
9.2	**Verification of the Currency of Operational Procedures**			
9.2.1	Check all relevant documentation before managing traffic.	3	*e.g. Briefing, LOAs, NOTAM, AICs*	ALL
9.3	**Handover - Takeover**			

9.3.1	Transfer information to the relieving controller.	3		ALL
9.3.2	Obtain information from the controller handing-over.	3		ALL

10 PROVISION OF AN AERODROME CONTROL SERVICE

10.1 General

10.1.1	Explain the responsibility for the provision of an aerodrome control service.	2	ICAO Doc 4444, ICAO Annex 11	ADV ADI
10.1.2	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	ADV ADI
10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444	ADV ADI
10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	ADV ADI

10.2 Functions of Aerodrome Control Tower

10.2.1	Manage the general functions of aerodrome control.	4	ICAO Doc 4444	ADV ADI
10.2.2	Manage the suspension of VFR operations.	4	ICAO Doc 4444	ADV ADI

10.3 Aeronautical Ground Lights

10.3.1	Select appropriate aeronautical ground lights.	5	ICAO Doc 4444	ADV ADI

10.4 Information to Aircraft by Aerodrome Control Tower

10.4.1	Provide information related to the operation of aircraft.	4	ICAO Doc 4444	ADV ADI
10.4.2	Provide information on aerodrome conditions.	4	ICAO Doc 4444	ADV ADI

10.5 Control of Aerodrome Traffic

10.5.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	ICAO Doc 4444	ADV ADI
10.5.2	Manage traffic on the manoeuvring area.	4	ICAO Doc 4444 Aircraft, vehicles *e.g. runway inspection*	ADV ADI
10.5.3	Manage traffic in accordance with procedural changes.	4	*e.g. Taxiway closure*	ADV ADI
10.5.4	Ensure an adequate priority of actions.	4	Formal and situational requirements, Workload	ADV ADI

10.6 Control of traffic in the Traffic Circuit				
10.6.1	Manage traffic in the traffic circuit.	4	ICAO Doc 4444 Meteorological phenomena, Geographical knowledge, Environmental factors	ADV ADI
10.6.2	Manage arriving and departing traffic.	4	ICAO Doc 4444, Allocation of the order of priority, Meteorological phenomena, Wake turbulence, Environmental factors	ADV ADI
10.6.3	Integrate the serviceability of radio aids in the management of aerodrome traffic.	4	*e.g. UDF, VDF, MLS, ILS, NDB, VOR, DME*	ADV ADI
10.6.4	Integrate surface conditions into the control of aerodrome traffic.	4	*e.g. Damp, Wet, Water patches, Flooding, Snow, Slush, Ice, Braking action*	ADV ADI
10.6.5	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	*e.g. Clouds, Precipitation, Visibility, Wind, Meteorological hazards*	ADV ADI
10.6.6	Integrate the information provided by situation displays.	4	Use, Advantages, Disadvantages	ADV ADI
10.7 Runway in use				
10.7.1	Select the runway in use.	5	ICAO Doc 4444	ADV ADI
10.7.2	Coordinate runway in use.	4	*e.g. Approach control, Area control, runway selection, change of runway*	ADV ADI
10.7.3	Manage traffic in the event of runway-in-use change.	4		ADV ADI
11 PROVISION OF AERODROME CONTROL - INSTRUMENT				
11.1 General				
11.1.1	Manage SVFR traffic.	4	ICAO Doc 4444	ADI
11.1.2	Describe the Procedures for Low Visibility Operations.	2	ICAO Doc 4444	ADI
11.2 Departing Traffic				
11.2.1	Manage control of departing aircraft.	4	ICAO Doc 4444, Use of situation displays, Wake turbulence, Appropriate departure clearances, SIDs	ADI
11.2.2	Integrate departure sequence into the control of aerodrome traffic.	4	ICAO Doc 4444	ADI
11.2.3	Provide appropriate information to departing traffic.	4	ICAO Doc 4444, Use of situation displays, Wake turbulence	ADI
11.3 Arriving Traffic				

11.3.1	Manage control of arriving aircraft.	4	ICAO Doc 4444, Wake turbulence	ADI
11.3.2	Integrate the approach sequence into the control of aerodrome traffic.	4	ICAO Doc 4444	ADI
11.3.3	Integrate aircraft on visual approach into the aerodrome traffic.	4	ICAO Doc 4444	ADI
11.3.4	Integrate aircraft on missed approach into the aerodrome traffic.	4	ICAO Doc 4444, Use of air traffic monitors	ADI
11.3.5	Appreciate expected approach times.	3	ICAO Doc 4444	ADI
11.3.6	Integrate aircraft performing circling approach into the aerodrome traffic.	4	ICAO Doc 8168	ADI
11.3.7	Provide appropriate information to arriving aircraft.	4	ICAO Doc 4444	ADI

Subject 4 : METEOROLOGY

The general objective is:

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

1 METEOROLOGICAL PHENOMENA

1.1 Meteorological Phenomena

1.1.1	Appreciate the impact of different cloud types.	3	Cumulus, Cumulonimbus *e.g. Stratus, Nimbostratus, etc.*	ADV ADI
1.1.2	Appreciate the impact of precipitation.	3	Precipitation and Microphysics *e.g. Rain, Snow, Sleet, Hail*	ADV ADI
1.1.3	Appreciate the impact of atmospheric obscurity.	3	*e.g. Advection fog, Radiation fog, Mixing, Evaporation, Mist, Drizzle*	ADV ADI
1.1.4	Appreciate the effect and impact of wind.	3	Gusting, Veering, Backing *e.g. Land breezes, Sea breezes, Fohn*	ADV ADI
1.1.5	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Windshear, Turbulence, Thunderstorms, Icing, Microbursts	ADV ADI
1.1.6	Appreciate the effect of a frontal system on aerodrome operations.	3		ADV ADI

2 SOURCES OF METEOROLOGICAL DATA

2.1 Meteorological Instruments

2.1.1	Extract information from meteorological instruments.	3	*e.g. Anemometer, RVR indicator, Cloud base indicator, Barometer*	ADV ADI

2.2 Other Sources

2.2.1	Decode information from meteorological data displays.	3		ADV ADI
2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3		ADV ADI
2.2.3	Relay meteorological information from pilot reports.	3	ICAO Doc 4444	ADV ADI

Subject 5 : NAVIGATION

The general objective is:

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

1	**MAPS AND AERONAUTICAL CHARTS**			
1.1	**Maps and Charts**			
1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Visual approach charts, Instrument approach charts, Aerodrome charts *e.g. Military maps and charts*	ADV ADI
1.1.2	Use relevant maps and charts.	3	Visual approach charts, Instrument approach charts, SID charts, Aerodrome charts *e.g. Military maps and charts*	ADI
2	**INSTRUMENTAL NAVIGATION**			
2.1	**Navigational Systems**			
2.1.1	Describe the possible operational status of navigational systems.	2	*e.g. NDB, VOR, DME, ILS, MLS, ABAS, SBAS, GBAS, RNP*	ADI
2.1.2	Decode operational status displays of navigational systems.	3	*e.g. NDB, VOR, DME, ILS, MLS, D-GPS, RNAV , P-RNAV*	ADI
2.1.3	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3		ADV ADI
2.1.4	Manage traffic in case of change in the operational status of navigational systems.	4	*e.g. limitations, status of ground based systems*	ADV ADI
2.2	**Satellite-based Systems**			
2.2.1	State the different operations associated with satellite-based systems.	1	*e.g. NPA, APV-baro VNAV, APV, LPV, Precision approach, ICAO Doc 8168 Vol.2*	ADI APP APS

Subject 6 : AIRCRAFT

The general objective is:

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

1 AIRCRAFT INSTRUMENTS

1.1 Aircraft Instruments

1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	*e.g. TCAS, wind shear indicator, weather radar*	ALL
1.1.2	Explain the operation of aircraft radio equipment.	2	*e.g. Radios (number of), emergency radios, SELCAL*	ALL
1.1.3	Explain the operation of transponder equipment.	2	Transponders: equipment Mode A, Mode C, Mode S	ALL
1.1.4	Explain the use and benefits of CPDLC.	2		ALL

2 AIRCRAFT CATEGORIES

2.1 Wake Turbulence Categories

2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL

2.2 ICAO Approach Categories

2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168	ADI APP APS
2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3		ADI APP APS

3 FACTORS AFFECTING AIRCRAFT PERFORMANCE

3.1 Takeoff

3.1.1	Integrate the influence of factors affecting aircraft on takeoff.	4	*e.g. Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass*	ADV ADI

3.2 Climb

3.2.1	Appreciate the influence of factors affecting aircraft during climb.	3	*e.g. speed, mass, air density, wind and temperature*	ADV ADI

3.3 Final Approach and Landing

3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*e.g. wind, aircraft configuration, mass, runway conditions, runway slope, aerodrome elevation*	ADV ADI
3.4	**Economic Factors**			
3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*e.g. Starting-up, Taxiing, Routing, Departure sequence*	ADV ADI
3.5	**Miscellaneous Factors**			
3.5.1	Appreciate the influence of operational requirements.	3	*e.g. Military flying, Calibration flights, Aerial photography*	ADV ADI ACP ACS
3.6	**Ecological Factors**			
3.6.1	Estimate the influence of ecological factors affecting aircraft.	3	*e.g. Noise abatement procedures, Minimum flight altitudes, Bird hazard*	ADV ADI
4	**AIRCRAFT DATA**			
4.1	**Recognition of Aircraft Types**			
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 *e.g. ICAO Approach Categories*	ADV ADI
4.2	**Performance Data**			
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 a control service.	4	Performance data under a representative variety of circumstances	ADV ADI
4.2.2	Identify potential or actual emergency situations.	3		ADV ADI

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

i. recognise the necessity to constantly extend their knowledge;
ii. analyse factors which affect personal and team performance.

1	**PSYCHOLOGICAL FACTORS**			
1.1	**Cognitive**			
1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
1.1.3	Monitor the effect of human information processing factors on decision making.	3	*e.g. workload, stress, interpersonal relations, distraction, confidence*	ALL
2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
2.1	**Fatigue**			
2.1.1	State factors that cause fatigue.	1	Shift work *e.g. night shifts and rosters*	ALL
2.1.2	Describe the onset of fatigue.	2	*e.g. Lack of concentration, Listlessness, Irritability, Frustration*	ALL
2.1.3	Recognise the onset of fatigue in self.	1		ALL
2.1.4	Recognise the onset of fatigue in others.	1		ALL
2.1.5	Consider appropriate action when recognising fatigue.	2		ALL
2.2	**Fitness**			
2.2.1	Recognise signs of lack of personal fitness.	1		ALL
2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
3	**SOCIAL AND ORGANISATIONAL FACTORS**			
3.1	**Team Resource Management (TRM)**			
3.1.1	State the objectives of TRM.	1	*e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
3.1.2	State the content of the TRM concept.	1	*e.g. team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL

3.2	**Teamwork and Team Roles**			
3.2.1	Identify reasons for conflict.	3		ALL
3.2.2	Describe actions to prevent human conflicts.	2	*e.g. TRM team roles*	ALL
3.2.3	Describe strategies to cope with human conflicts.	2	*e.g. in your team, in the simulator*	ALL
3.3	**Responsible behaviour**			
3.3.1	Consider the factors which influence responsible behaviour.	2	*e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
4	**STRESS**			
4.1	**Stress**			
4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
4.2	**Stress Management**			
4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
4.2.2	Obtain assistance in stressful situations.	3	*e.g. The benefits of offering,accepting and asking for help in stressful situations*	ALL
4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
4.2.5	Explain procedures used following an incident/accident.	2	*e.g. CISM, Counselling, Human element*	ALL
5	**HUMAN ERROR**			
5.1	**Human Error**			
5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
5.1.2	Differentiate between the types of error.	2	*e.g. Slips, Lapses, Mistakes*	ALL
5.1.3	Describe error-prone conditions.	2	*e.g. increase in traffic*	ALL

5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL
5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL

5.2 Violation of rules

5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2		ALL

6 WORKING METHODS

6.1 Efficiency

6.1.1	Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.	2	*e.g. Own and others workload, OJT, customer requirements, economy, ecology, safety*	ALL

7 WORKING KNOWLEDGE

7.1 Controller Knowledge

7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	*e.g. Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*	ALL

8 COLLABORATIVE WORK

8.1 Communication

8.1.1	Use communication effectively in ATC.	3		ALL

8.2 Collaborative work within the same area of responsibility

8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*e.g. Electronic, written, verbal and non-verbal communication*	ALL
8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*e.g. Strips legibility and encoding, Radar labels designation, Feedback*	ALL
8.2.3	List possible actions to provide a safe position hand over.	1	*e.g. rigour, preparation, overlap time*	ALL
8.2.4	Explain consequences of a missed position hand over process.	2		ALL

8.3	**Collaborative work between different areas of responsibility**			
8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*e.g. Other sectors constraints, electronic coordination tools*	ALL
8.4	**Controller/Pilot Cooperation**			
8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*e.g. workload, mutual knowledge, controller vs. pilot mental picture*	ALL
9	**WORK ENVIRONMENT**			
9.1	**Ergonomics**			
9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL
10	**ATC SAFETY MANAGEMENT**			
10.1	**Experience feedback**			
10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	*e.g. voluntary reporting*	ALL
10.1.2	Describe how reported occurrences are analysed.	2	*e.g. ESARR2, local procedures*	ALL
10.1.3	Name the means used to disseminate recommendations.	1	*e.g. Safety letters, safety boards web pages*	ALL
10.1.4	Explain the "Just Culture" concept.	2	benefits, prerequisites, constraints *e.g. EAM 2 GUI 6, GAIN Report*	ALL
10.2	**Safety investigation branch**			
10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
10.2.2	Define working methods of Safety Investigation Branch.	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

i. integrate knowledge and understanding of the basic working principles of equipment and systems and
ii. comply with the equipment and system degradation procedures in the provision of ATS.

1	**VOICE COMMUNICATIONS**			
1.1	**Radio Communications**			
1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures *e.g. Frequency selection, Stand-by equipment*	ALL
1.1.2	Identify indications of operational status of radio equipment.	3	*e.g. Indicator lights, Serviceability displays, Selector/frequency displays*	ALL
1.2	**Other voice communications**			
1.2.1	Operate land line communications.	3	*e.g. telephone, interphone and intercom equipment*	ALL
2	**AUTOMATION IN ATS**			
2.1	**Aeronautical Fixed Telecommunication Network (AFTN)**			
2.1.1	Decode AFTN messages.	3	*e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
2.2	**Automatic Data Interchange**			
2.2.1	Use automatic data transfer equipment where available.	3	*e.g Sequencing systems, Automated information and coordination, OLDI*	ALL
3	**CONTROLLER WORKING POSITION**			
3.1	**General**			
3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	*e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF*	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL
3.2	**Situation displays and Information Systems**			
3.2.1	Use situation displays.	3		ALL
3.2.2	Check availability of information material.	3		ALL

3.2.3	Obtain information from equipment.	3	*e.g. information from wind direction indicator*	ADV ADI
3.2.4	Take account of anti-incursion equipment.	2		ADV ADI
3.2.5	Explain the use of ASMGCS.	2		ADI
3.3	**Flight Data Systems**			
3.3.1	Use the flight data information at controller working position.	3		ALL
4	**FUTURE EQUIPMENT**			
4.1	**New Developments**			
4.1.1	Recognise future developments.	1	New advanced systems	ALL
5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
5.1	**General**			
5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL
5.2	**Communication equipment degradation**			
5.2.1	Identify that communication equipment has degraded.	3	*e.g. Ground-air, ground-ground and land line communications*	ADV ADI
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	*e.g. total or partial degradation of ground-air, ground-ground and land line communications; Alternative methods of transfering data*	ADV ADI
5.3	**Navigational equipment degradation**			
5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*e.g. VOR, Navigational aids*	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	*e.g. Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*	ALL

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1	**PROFESSIONAL ENVIRONMENT**			
1.1	**Contributors to ATS operations**			
1.1.1	Characterise civil and military ATS activities.	2	*Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	*Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices*	ALL
1.2	**Customer Relations**			
1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	*e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*	ALL
1.3	**Environmental Protection**			
1.3.1	Describe processes used to ensure environmental protection.	2	*e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations*	ALL

Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

Learners shall develop professional attitudes to manage traffic in unusual, degraded and emergency situations.

1	**UNUSUAL/DEGRADED/EMERGENCY SITUATIONS**			
1.1	**General**			
1.1.1	List common unusual/degraded/ emergency situations.	1	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion*	ALL
1.1.2	Take into account the procedures for given unusual/degraded/ emergency situations.	2		ALL
1.1.3	Take into account that procedures don't exist for all unusual/ degraded/emergency situations.	2	*e.g. real life examples*	ALL
1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*e.g. Separation, Information, Coordination*	ALL
2	**SKILLS IMPROVEMENT**			
2.1	**Communication Effectiveness**			
2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Read back, Silence instruction	ALL
2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
2.2	**Avoidance of mental overload**			
2.2.1	Describe actions to keep the control of the situation.	2	*e.g. sector splitting, holding, flow management, task delegation*	ALL
2.2.2	Organise priority of actions.	4		ALL
2.2.3	Ensure an effective circulation of information.	4	*e.g. between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL
2.2.4	Consider asking for help.	2		ALL
2.3	**Air/Ground Cooperation**			
2.3.1	Collect appropriate information relevant for the situation.	3		ALL

2.3.2	Assist the pilot.	3	pilot workload *e.g. Instructions, information, support, human factors, etc.*	ALL

3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS

3.1 General

3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	Runway incursion *e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, Ambulance flights, GPWS alerts, airframe failure*	ADI

3.2 Radio failure

3.2.1	Describe the procedures followed by a pilot when he experiences complete or partial radio failure.	2	ICAO Doc 7030 *e.g. military procedures*	ALL
3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*e.g. Prolonged loss of communication*	ALL

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL

3.4 Strayed or Unidentified Aircraft

3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *e.g. Inside controlled airspace, Outside controlled airspace*	ALL
3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
3.4.3	Provide navigational assistance to aircraft.	4	*e.g. 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 ADI

Subject 11: AERODROMES

The general objective is:

Learners shall recognise and understand the design and layout of Aerodromes.

1 GENERAL

1.1 Definitions

1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 *e.g. AIP*	APP APS ADV ADI
1.1.2	Define aerodrome data.	1	ICAO Annex 14 *e.g. Aerodrome elevation, Reference point, Apron, Movement area, Manoeuvring area, Hot spot*	ADV ADI APP APS

1.2 Coordination

1.2.1	Identify the information that has to be passed between Air Traffic Services (ATS) and the airport authority.	3	Airport conditions, Fire/rescue category, Condition of ground equipment and NAVAIDs, AIRAC, ICAO Annex 14	APP APS ADV ADI

2 MOVEMENT AREA

2.1 Movement Area

2.1.1	Describe movement area.	2	ICAO Annex 14	ADV ADI APP APS
2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights	ADV ADI APP APS
2.1.3	Identify the information on conditions of the movement area that have to be passed to aircraft.	3	Essential information on aerodrome conditions	ADV ADI APP APS

2.2 Manoeuvring Area

2.2.1	Describe manoeuvring area.	2	ICAO Annex 14	ADV ADI APP APS
2.2.2	Describe taxiway.	2		ADV ADI APP APS
2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS

2.3 Runways

2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways	ADV ADI APP APS
2.3.2	Describe instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.3	Describe non-instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	ADV ADI APP APS
2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	ADV ADI APP APS
2.3.6	Describe the daylight markings on runways.	2	*e.g. Runway Designator, Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour*	ADV ADI APP APS
2.3.7	Describe runway lights.	2	*e.g. Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes*	ADV ADI APP APS
2.3.8	Explain the functions of visual landing aids.	2	*e.g. AVASI, VASI, PAPI*	ADV ADI APP APS
2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, Stroboscopic lights, Colours, Intensity and brightness	ADV ADI APP APS
2.3.10	Characterise the effect of water/ice on runways.	2		ADV ADI APP APS
2.3.11	Explain braking action.	2	Braking action coefficient	ADV ADI APP APS
2.3.12	Explain the effect of runway visual range on aerodrome operation	2		ADV ADI APP APS
3	**OBSTACLES**			
3.1	**General**			
3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS
4	**MISCELLANEOUS EQUIPMENT**			
4.1	**Location**			
4.1.1	Explain the location of different aerodrome ground equipment.	2	*e.g. LLZ, GLD, VDF, radiocommunication or radar antennas, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

Page intentionally left blank.

Page intentionally left blank.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 4
Approach Control Procedural Rating syllabus - APP

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 4
Approach Control Procedural Rating syllabus
APP

Edition Number : **1.0**
Edition Date : **21/10/2008**
Status : **Released Issue**
Intended for : **EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 4 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the **Approach Control Procedural Rating syllabus (APP)**.

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Rating phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Rating phase of Initial Training of ATCOs.

Rating training is defined as ***specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely -

- SUBJECT 1: Introduction to the Course (INTR)
- SUBJECT 2: Aviation Law (LAW)
- SUBJECT 3: Air Traffic Management (ATM)
- SUBJECT 4: Meteorology (MET)
- SUBJECT 5: Navigation (NAV)
- SUBJECT 6: Aircraft (ACFT)
- SUBJECT 7: Human Factors (HUM)
- SUBJECT 8: Equipment and Systems (EQPS)
- SUBJECT 9: Professional Environment (PEN)
- SUBJECT 10: Unusual/Degraded/Emergency Situations (UDES)
- SUBJECT 11: Aerodromes (AGA)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **APP training course**, training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1	**COURSE MANAGEMENT**			
1.1	**Course Introduction**			
1.1.1	Explain the aims and main objectives of the course.	2		ALL
1.2	**Course Administration**			
1.2.1	State course administration.	1		ALL
1.3	**Study Material and Training Documentation**			
1.3.1	Use appropriate documentation and their sources for course studies.	3	*e.g. Training documentation, library, CBT library, Web, Learning Management Server*	ALL
1.3.2	Integrate appropriate information into course studies.	4	*e.g. Training documentation, supplementary information, library*	ALL
2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
2.1	**Course Content and Organisation**			
2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study	ALL
2.1.2	State the subjects of the course and their purpose.	1		ALL
2.1.3	Describe the organisation of theoretical training.	2		ALL
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*	ALL
2.2	**Training Ethos**			
2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL
2.3	**The Assessment Process**			
2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

i. know, understand and apply the Rules of the Air and the Regulations regarding reporting, airspace and
ii. appreciate the Licensing and Competence principles.

1 ATC LICENSING / CERTIFICATE OF COMPETENCE

1.1 Privileges and Conditions

1.1.1	Appreciate the conditions which must be met for the issue of Approach Control Procedural rating	3	EU Community air traffic controller licence Directive, ESARR5 rating, valid rating *e.g. National documents, European Manual of Personnel Licensing - Air Traffic Controllers*	APP
1.1.2	Explain the conditions for suspension/revocation of ATCO license.	2	Incident/Accident, Competence in doubt, Medical	ALL

2 RULES AND REGULATIONS

2.1 Reports

2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*	ALL
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*	ALL
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*	ALL

2.2 Airspace

2.2.1	Appreciate classes and structure of airspace and their relevance to Approach Control Procedural rating operations.	3		APP
2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*e.g. ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation*	ALL
2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT

1.1 Air Traffic Control (ATC) Service

1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals	APP ACP APS ACS
1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS

1.2 Flight Information Service (FIS)

1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information	APP ACP APS ACS
1.2.2	Provide FIS.	4	ICAO Doc 4444	ALL

1.3 Alerting Service (ALRS)

1.3.1	Provide ALRS.	4	ICAO Doc 4444	ALL
1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10 ICAO Doc 4444	ALL

1.4 ATS System Capacity and Air Traffic Flow Management

1.4.1	Appreciate principles of ATFM.	3	*e.g. Working principles of ATFM, FUA, free flight, etc.*	APP ACP APS ACS
1.4.2	Apply flow management procedures.	3		APP ACP APS ACS
1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*e.g. 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
1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4		APP ACP APS ACS
1.4.5	Inform supervisor of situation.	3	*e.g. Abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), unusual meteorological conditions*	APP ACP APS ACS

1.5 Airspace Management (ASM)

1.5.1	Appreciate the principles and means of ASM.	3	*e.g. FUA, ICAO Doc 4444, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs*	APP ACP APS ACS
2 COMMUNICATION				
2.1 Effective Communication				
2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
3 ATC CLEARANCES AND ATC INSTRUCTIONS				
3.1 ATC Clearances				
3.1.1	Issue appropriate ATC clearances.	3		ALL
3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
3.1.3	Ensure the agreed course of action is carried out.	4		ALL
3.2 ATC Instructions				
3.2.1	Issue appropriate ATC instructions.	3		ALL
3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
3.2.3	Ensure the agreed course of action is carried out.	4		ALL
4 COORDINATION				
4.1 Necessity				
4.1.1	Identify the need for coordination.	3		ALL
4.2 Tools and Methods				
4.2.1	Use the available tools for coordination.	3	*e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination*	ALL
4.3 Coordination Procedures				

4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *e.g. release point*	ALL
4.3.2	Analyse effect of coordination requested by an adjacent position/ unit.	4	*e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit , When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
5	**ALTIMETRY AND LEVEL ALLOCATION**			
5.1	**Altimetry**			
5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.2	Ensure separation according to altimetry data.	4	*e.g. Transition level , transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
5.2	**Terrain Clearance**			
5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*e.g. Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude*	APP ACP
6	**SEPARATIONS**			
6.1	**Vertical Separation**			
6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, Level allocation, During climb/descent, Rate of climb/ descent	APP APS
6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *e.g. Level allocation, During climb/descent, Rate of climb/descent*	APP ACP APS ACS
6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
6.2	**Horizontal Separation**			

6.2.1	Provide longitudinal separation.	4	Based on time, Based on distance (DME and/ or GNSS, RNAV), Based on time and ATS surveillance systems observation - European Region only	APP
6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030	ACP APP
6.2.3	Provide track separation.	4		ACP APP
6.2.4	Provide geographical separation.	4	Visual, Using navigation aids, Area Navigation	ACP APP
6.3	**Delegation of Separation**			
6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3		APP APS
6.3.3	Provide contingency separation in the event of a navigation aid failure.	4	Vertical, Standard, Emergency	ACP APP
7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
7.1	**Airborne Collision Avoidance Systems**			
7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS *e.g. GPWS*	APP ACP APS ACS
8	**DATA DISPLAY**			
8.1	**Data Management**			
8.1.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
8.1.2	Analyse pertinent data on data displays.	4		ALL
8.1.3	Organise pertinent data on data displays.	4		ALL
8.1.4	Process pertinent data on data displays.	3		ALL
8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information *e.g. RPL, AFIL etc.*	ALL

8.1.6	Use flight plan information.	3		ALL

9 OPERATIONAL ENVIRONMENT

9.1 Integrity of the Operational Environment

9.1.1	Obtain information concerning the operational environment.	3	*e.g. Briefing, notices, local orders, verification of information*	ALL
9.1.2	Ensure the integrity of the operational environment.	4	*e.g. Integrity of displays, Verifcation of the information provided by displays, etc.*	APP ACP APS ACS

9.2 Verification of the Currency of Operational Procedures

9.2.1	Check all relevant documentation before managing traffic.	3	*e.g. Briefing, LOAs, NOTAM, AICs*	ALL
9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS

9.3 Handover - Takeover

9.3.1	Transfer information to the relieving controller.	3		ALL
9.3.2	Obtain information from the controller handing-over.	3		ALL

10 PROVISION OF CONTROL SERVICE

10.1 Responsibility and Processing of Information

10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.3	Obtain operational information.	3	ICAO Doc 4444, Local operation manuals	APP ACP APS ACS
10.1.4	Interpret operational information.	5		APP ACP APS ACS
10.1.5	Organise forwarding of operational information.	4	*e.g. including the use of backup procedures*	APP ACP APS ACS
10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
10.1.7	Ensure an adequate priority of actions.	4	formal and situational requirements, workload	APP ACP APS ACS
10.1.8	Balance the workload with the traffic demand.	5	*e.g. in own sector, in adjacent sectors*	APP ACP APS ACS
10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS

10.2 Approach Control				
10.2.1	Explain the responsibility for the provision of an approach procedural control service.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals	APP
11 HOLDING				
11.1 General Holding Procedures				
11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
11.1.2	Appreciate the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.	3		APP ACP APS ACS
11.2 Vertical Separation				
11.2.1	Provide vertical separation between aircraft in a holding pattern.	4		APP ACP APS ACS
11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft.	4		APP ACP APS ACS
11.3 Approaching Aircraft				
11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3		APP APS
11.3.2	Organise the traffic landing sequence in a holding pattern.	4	*e.g. company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management*	APP APS

Subject 4 : METEOROLOGY

The general objective is:

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

1 METEOROLOGICAL PHENOMENA				
1.1 Meteorological Phenomena				
1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Clear Air Turbulence (CAT), Turbulence, Microburst, Windshear, Severe mountain waves, Line squalls *e.g. Volcanic ash*	APP APS
1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	*e.g. Separation, holding, diversions, re-routings, etc*	APP ACP APS ACS
1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	*e.g.Thunderstorm, Turbulence, Icing, Volcanic ash*	APP ACP APS ACS
1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS
2 SOURCES OF METEOROLOGICAL DATA				
2.1 Sources of meteorological information				
2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *e.g. AIREP/AIREP Special*	APP ACP APS ACS
2.1.2	Relay meteorological information	3	To: aircraft, MET office *e.g. flight information centre, adjacent ATS unit*	APP ACP APS ACS

Subject 5 : NAVIGATION

The general objective is:

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

1	**MAPS AND AERONAUTICAL CHARTS**			
1.1	**Maps and Charts**			
1.1.1	Use relevant maps and charts.	3		APP ACP APS ACS
2	**INSTRUMENTAL NAVIGATION**			
2.1	**Navigational Systems**			
2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*e.g. limitations, status of ground based and satelite based systems*	APP ACP APS ACS
2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*e.g. limitations, status, degraded procedures*	APP ACP APS ACS
2.2	**Navigational Assistance**			
2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*e.g. Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time*	APP ACP
2.3	**Satellite-based Systems**			
2.3.1	State the different operations associated with satellite-based systems.	1	*e.g. NPA, APV-baro VNAV, APV, LPV, Precision approach, ICAO Doc 8168 Vol.2*	ADI APP APS

Subject 6 : AIRCRAFT

The general objective is:

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

1 AIRCRAFT INSTRUMENTS				
1.1 Aircraft Instruments				
1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	*e.g. TCAS, wind shear indicator, weather radar*	ALL
1.1.2	Explain the operation of aircraft radio equipment.	2	*e.g. Radios (number of), emergency radios, SELCAL*	ALL
1.1.3	Explain the operation of transponder equipment.	2	Transponders: equipment Mode A, Mode C, Mode S	ALL
1.1.4	Explain the use and benefits of CPDLC.	2		ALL
2 AIRCRAFT CATEGORIES				
2.1 Wake Turbulence Categories				
2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
2.2 ICAO Approach Categories				
2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168	APP APS
2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3		APP APS
3 FACTORS AFFECTING AIRCRAFT PERFORMANCE				
3.1 Climb				
3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*e.g. speed, mass, air density, wind and temperature*	APP ACP APS ACS
3.1.2	Appreciate the influence of factors affecting aircraft on takeoff.	3	*e.g. Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass*	APP APS
3.2 Cruise				
3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
3.3 Descent and Initial Approach				

3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*e.g. wind, speed, rate of descent, aircraft configuration, cabin pressurisation*	APP APS
3.4	**Final Approach and Landing**			
3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*e.g. Wind, Aircraft configuration, Mass, Meteorological conditions, Runway conditions, Runway slope, Aerodrome elevation*	APP APS
3.5	**Economic Factors**			
3.5.1	Integrate consideration of economic factors affecting aircraft.	4	*e.g. Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile*	APP APS
3.5.2	Use continuous climb techniques where applicable.	3		APP APS
3.5.3	Use direct routing where applicable.	3		APP APS
3.6	**Miscellaneous Factors**			
3.6.1	Appreciate the influence of operational requirements.	3	*e.g. Military flying, Calibration flights, Aerial photography*	APP APS
3.7	**Ecological Factors**			
3.7.1	Estimate the influence of ecological factors affecting aircraft.	3	*e.g. Fuel dumping, Noise abatement procedures, Minimum flight levels, Bird hazard, Continuous Descent Approach*	APP APS
4	**AIRCRAFT DATA**			
4.1	**Performance Data**			
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 a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
4.1.2	Identify potential or actual emergency situations.	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

i. recognise the necessity to constantly extend their knowledge;
ii. analyse factors which affect personal and team performance.

1 PSYCHOLOGICAL FACTORS				
1.1 Cognitive				
1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
1.1.3	Monitor the effect of human information processing factors on decision making.	3	*e.g. workload, stress, interpersonal relations, distraction, confidence*	ALL
2 MEDICAL AND PHYSIOLOGICAL FACTORS				
2.1 Fatigue				
2.1.1	State factors that cause fatigue.	1	Shift work *e.g. night shifts and rosters*	ALL
2.1.2	Describe the onset of fatigue.	2	*e.g. Lack of concentration, Listlessness, Irritability, Frustration*	ALL
2.1.3	Recognise the onset of fatigue in self.	1		ALL
2.1.4	Recognise the onset of fatigue in others.	1		ALL
2.1.5	Consider appropriate action when recognising fatigue.	2		ALL
2.2 Fitness				
2.2.1	Recognise signs of lack of personal fitness.	1		ALL
2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
3 SOCIAL AND ORGANISATIONAL FACTORS				
3.1 Team Resource Management (TRM)				
3.1.1	State the objectives of TRM.	1	*e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
3.1.2	State the content of the TRM concept.	1	*e.g. team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
3.2 Teamwork and Team Roles				

3.2.1	Identify reasons for conflict.	3		ALL
3.2.2	Describe actions to prevent human conflicts.	2	*e.g. TRM team roles*	ALL
3.2.3	Describe strategies to cope with human conflicts.	2	*e.g. in your team, in the simulator*	ALL
3.3	**Responsible behaviour**			
3.3.1	Consider the factors which influence responsible behaviour.	2	*e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
4	**STRESS**			
4.1	**Stress**			
4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
4.2	**Stress Management**			
4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
4.2.2	Obtain assistance in stressful situations.	3	*e.g. The benefits of offering,accepting and asking for help in stressful situations*	ALL
4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
4.2.5	Explain procedures used following an incident/accident.	2	*e.g. CISM, Counselling, Human element*	ALL
5	**HUMAN ERROR**			
5.1	**Human Error**			
5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
5.1.2	Differentiate between the types of error.	2	*e.g. Slips, Lapses, Mistakes*	ALL
5.1.3	Describe error-prone conditions.	2	*e.g. increase in traffic*	ALL
5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL

5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL
5.2	**Violation of rules**			
5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2		ALL
6	**WORKING METHODS**			
6.1	**Efficiency**			
6.1.1	Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.	2	*e.g. Own and others workload, OJT, customer requirements, economy, ecology, safety*	ALL
7	**WORKING KNOWLEDGE**			
7.1	**Controller Knowledge**			
7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	*e.g. Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*	ALL
8	**COLLABORATIVE WORK**			
8.1	**Communication**			
8.1.1	Use communication effectively in ATC.	3		ALL
8.2	**Collaborative work within the same area of responsibility**			
8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*e.g. Electronic, written, verbal and non-verbal communication*	ALL
8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*e.g. Strips legibility and encoding, Radar labels designation, Feedback*	ALL
8.2.3	List possible actions to provide a safe position hand over.	1	*e.g. rigour, preparation, overlap time*	ALL
8.2.4	Explain consequences of a missed position hand over process.	2		ALL
8.3	**Collaborative work between different areas of responsibility**			
8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*e.g. Other sectors constraints, electronic coordination tools*	ALL

8.4	**Controller/Pilot Cooperation**			
8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*e.g. workload, mutual knowledge, controller vs. pilot mental picture*	ALL
9	**WORK ENVIRONMENT**			
9.1	**Ergonomics**			
9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL
10	**ATC SAFETY MANAGEMENT**			
10.1	**Experience feedback**			
10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	*e.g. voluntary reporting*	ALL
10.1.2	Describe how reported occurrences are analysed.	2	*e.g. ESARR2, local procedures*	ALL
10.1.3	Name the means used to disseminate recommendations.	1	*e.g. Safety letters, safety boards web pages*	ALL
10.1.4	Explain the "Just Culture" concept.	2	benefits, prerequisites, constraints *e.g. EAM 2 GUI 6, GAIN Report*	ALL
10.2	**Safety investigation branch**			
10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
10.2.2	Define working methods of Safety Investigation Branch.	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

i. integrate knowledge and understanding of the basic working principles of equipment and systems and
ii. comply with the equipment and system degradation procedures in the provision of ATS.

1	**VOICE COMMUNICATIONS**			
1.1	**Radio Communications**			
1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures *e.g. Frequency selection, Stand-by equipment*	ALL
1.1.2	Identify indications of operational status of radio equipment.	3	*e.g. Indicator lights, Serviceability displays, Selector/frequency displays*	ALL
1.1.3	Consider radio range.	2	*e.g. Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range*	APP ACP APS ACS
1.2	**Other voice communications**			
1.2.1	Operate land line communications.	3	*e.g. telephone, interphone and intercom equipment*	ALL
2	**AUTOMATION IN ATS**			
2.1	**Aeronautical Fixed Telecommunication Network (AFTN)**			
2.1.1	Decode AFTN messages.	3	*e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
2.2	**Automatic Data Interchange**			
2.2.1	Use automatic data transfer equipment where available.	3	*e.g Sequencing systems, Automated information and coordination, OLDI*	ALL
3	**CONTROLLER WORKING POSITION**			
3.1	**General**			
3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	*e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF*	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL
3.2	**Situation displays and Information Systems**			
3.2.1	Use situation displays.	3		ALL

3.2.2	Check availability of information material.	3		ALL
3.2.3	Obtain the information from equipment.	3		APP ACP APS ACS
3.3	**Flight Data Systems**			
3.3.1	Use the flight data information at controller working position.	3		ALL
4	**FUTURE EQUIPMENT**			
4.1	**New Developments**			
4.1.1	Recognise future developments.	1	New advanced systems	ALL
5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
5.1	**General**			
5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL
5.2	**Communication equipment degradation**			
5.2.1	Identify that communication equipment has degraded.	3	*e.g. Ground-air and land line communications*	APP ACP APS ACS
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and land line communications, Alternative methods of transfering data	APP ACP APS ACS
5.3	**Navigational equipment degradation**			
5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*e.g. VOR, Navigational aids*	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	*e.g. Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*	ALL

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1	**PROFESSIONAL ENVIRONMENT**			
1.1	**Contributors to ATS operations**			
1.1.1	Characterise civil and military ATS activities.	2	*Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	*Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices*	ALL
1.2	**Customer Relations**			
1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	*e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*	ALL
1.3	**Environmental Protection**			
1.3.1	Describe processes used to ensure environmental protection.	2	*e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations*	ALL

Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

Learners shall develop professional attitudes to manage traffic in unusual, degraded and emergency situations.

1	**UNUSUAL/DEGRADED/EMERGENCY SITUATIONS**			
1.1	**General**			
1.1.1	List common unusual/degraded/ emergency situations.	1	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion*	ALL
1.1.2	Take into account the procedures for given unusual/degraded/ emergency situations.	2		ALL
1.1.3	Take into account that procedures don't exist for all unusual/ degraded/emergency situations.	2	*e.g. real life examples*	ALL
1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*e.g. Separation, Information, Coordination*	ALL
2	**SKILLS IMPROVEMENT**			
2.1	**Communication Effectiveness**			
2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Read back, Silence instruction	ALL
2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
2.2	**Avoidance of mental overload**			
2.2.1	Describe actions to keep the control of the situation.	2	*e.g. sector splitting, holding, flow management, task delegation*	ALL
2.2.2	Organise priority of actions.	4		ALL
2.2.3	Ensure an effective circulation of information.	4	*e.g. between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL
2.2.4	Consider asking for help.	2		ALL
2.3	**Air/Ground Cooperation**			
2.3.1	Collect appropriate information relevant for the situation.	3		ALL

2.3.2	Assist the pilot.	3	pilot workload *e.g. Instructions, information, support, human factors, etc.*	ALL

3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS

3.1 General

3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations* *Ambulance flights, GPWS alerts, airframe failure*	ADV APP ACP APS ACS

3.2 Radio failure

3.2.1	Describe the procedures followed by a pilot when he experiences complete or partial radio failure.	2	ICAO Doc 7030 *e.g. military procedures*	ALL
3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*e.g. Prolonged loss of communication*	ALL

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL

3.4 Strayed or Unidentified Aircraft

3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *e.g. Inside controlled airspace, Outside controlled airspace*	ALL
3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL

3.5 Diversions

3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, Distance, Other navigational assistance *e.g. Nearest most suitable aerodrome*	APP ACP APS ACS

Subject 11: AERODROMES

The general objective is:

Learners shall recognise and understand the design and layout of Aerodromes.

1 GENERAL				
1.1 Definitions				
1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 *e.g. AIP*	APP APS ADV ADI
1.1.2	Define aerodrome data.	1	ICAO Annex 14 *e.g. Aerodrome elevation, Reference point, Apron, Movement area, Manoeuvring area, Hot spot*	ADV ADI APP APS
1.2 Coordination				
1.2.1	Identify the information that has to be passed between Air Traffic Services (ATS) and the airport authority.	3	Airport conditions, Fire/rescue category, Condition of ground equipment and NAVAIDs, AIRAC, ICAO Annex 14	APP APS ADV ADI
2 MOVEMENT AREA				
2.1 Movement Area				
2.1.1	Describe movement area.	2	ICAO Annex 14	ADV ADI APP APS
2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights	ADV ADI APP APS
2.1.3	Identify the information on conditions of the movement area that have to be passed to aircraft.	3	Essential information on aerodrome conditions	ADV ADI APP APS
2.2 Manoeuvring Area				
2.2.1	Describe manoeuvring area.	2	ICAO Annex 14	ADV ADI APP APS
2.2.2	Describe taxiway.	2		ADV ADI APP APS
2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS
2.3 Runways				
2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways	ADV ADI APP APS

2.3.2	Describe instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.3	Describe non-instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	ADV ADI APP APS
2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	ADV ADI APP APS
2.3.6	Describe the daylight markings on runways.	2	*e.g. Runway Designator, Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour*	ADV ADI APP APS
2.3.7	Describe runway lights.	2	*e.g. Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes*	ADV ADI APP APS
2.3.8	Explain the functions of visual landing aids.	2	*e.g. AVASI, VASI, PAPI*	ADV ADI APP APS
2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, Stroboscopic lights, Colours, Intensity and brightness	ADV ADI APP APS
2.3.10	Characterise the effect of water/ice on runways.	2		ADV ADI APP APS
2.3.11	Explain braking action.	2	Braking action coefficient	ADV ADI APP APS
2.3.12	Explain the effect of runway visual range on aerodrome operation	2		ADV ADI APP APS

3 OBSTACLES

3.1 General

3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS

4 MISCELLANEOUS EQUIPMENT

4.1 Location

4.1.1	Explain the location of different aerodrome ground equipment.	2	*e.g. LLZ, GLD, VDF, radiocommunication or radar antennas, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

Page intentionally left blank.

Page intentionally left blank.

Page intentionally left blank.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 5
Area Control Procedural Rating syllabus - ACP

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 5
Area Control Procedural Rating syllabus
ACP

Edition Number	**:**	**1.0**
Edition Date	**:**	**21/10/2008**
Status	**:**	**Released Issue**
Intended for	**:**	**EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 5 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the **Area Control Procedural Rating syllabus (ACP)**.

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Rating phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Rating phase of Initial Training of ATCOs.

Rating training is defined as ***specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely -

- SUBJECT 1: Introduction to the Course (INTR)
- SUBJECT 2: Aviation Law (LAW)
- SUBJECT 3: Air Traffic Management (ATM)
- SUBJECT 4: Meteorology (MET)
- SUBJECT 5: Navigation (NAV)
- SUBJECT 6: Aircraft (ACFT)
- SUBJECT 7: Human Factors (HUM)
- SUBJECT 8: Equipment and Systems (EQPS)
- SUBJECT 9: Professional Environment (PEN)
- SUBJECT 10: Unusual/Degraded/Emergency Situations (UDES)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **ACP training course**, training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1	**COURSE MANAGEMENT**			
1.1	**Course Introduction**			
1.1.1	Explain the aims and main objectives of the course.	2		ALL
1.2	**Course Administration**			
1.2.1	State course administration.	1		ALL
1.3	**Study Material and Training Documentation**			
1.3.1	Use appropriate documentation and their sources for course studies.	3	*e.g. Training documentation, library, CBT library, Web, Learning Management Server*	ALL
1.3.2	Integrate appropriate information into course studies.	4	*e.g. Training documentation, supplementary information, library*	ALL
2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
2.1	**Course Content and Organisation**			
2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study	ALL
2.1.2	State the subjects of the course and their purpose.	1		ALL
2.1.3	Describe the organisation of theoretical training.	2		ALL
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*	ALL
2.2	**Training Ethos**			
2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL
2.3	**The Assessment Process**			
2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

i. know, understand and apply the Rules of the Air and the Regulations regarding reporting, airspace and
ii. appreciate the Licensing and Competence principles.

1	**ATC LICENSING / CERTIFICATE OF COMPETENCE**			
1.1	**Privileges and Conditions**			
1.1.1	Appreciate the conditions which must be met for the issue of Area Control Procedural rating.	3	EU Community air traffic controller licence Directive, ESARR5 rating, valid rating *e.g. National documents, European Manual of Personnel Licensing - Air Traffic Controllers*	ACP
1.1.2	Explain the conditions for suspension/revocation of ATCO license.	2	Incident/Accident, Competence in doubt, Medical	ALL
2	**RULES AND REGULATIONS**			
2.1	**Reports**			
2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*	ALL
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*	ALL
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*	ALL
2.2	**Airspace**			
2.2.1	Appreciate classes and structure of airspace and their relevance to Area Control Procedural rating operations.	3		ACP
2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*e.g. ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation*	ALL
2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT

1.1 Air Traffic Control (ATC) Service

1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals	APP ACP APS ACS
1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS

1.2 Flight Information Service (FIS)

1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information	APP ACP APS ACS
1.2.2	Provide FIS.	4	ICAO Doc 4444	ALL

1.3 Alerting Service (ALRS)

1.3.1	Provide ALRS.	4	ICAO Doc 4444	ALL
1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10 ICAO Doc 4444	ALL

1.4 ATS System Capacity and Air Traffic Flow Management

1.4.1	Appreciate principles of ATFM.	3	*e.g. Working principles of ATFM, FUA, free flight, etc.*	APP ACP APS ACS
1.4.2	Apply flow management procedures.	3		APP ACP APS ACS
1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*e.g. 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
1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4		APP ACP APS ACS
1.4.5	Inform supervisor of situation.	3	*e.g. Abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), unusual meteorological conditions*	APP ACP APS ACS

1.5 Airspace Management (ASM)

1.5.1	Appreciate the principles and means of ASM.	3	*e.g. FUA, ICAO Doc 4444, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs*	APP ACP APS ACS
1.5.2	Organise traffic to take account of ASM.	4		ACP ACS
2	**COMMUNICATION**			
2.1	**Effective Communication**			
2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
3.1	**ATC Clearances**			
3.1.1	Issue appropriate ATC clearances.	3		ALL
3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
3.1.3	Ensure the agreed course of action is carried out.	4		ALL
3.2	**ATC Instructions**			
3.2.1	Issue appropriate ATC instructions.	3		ALL
3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
3.2.3	Ensure the agreed course of action is carried out.	4		ALL
4	**COORDINATION**			
4.1	**Necessity**			
4.1.1	Identify the need for coordination.	3		ALL
4.2	**Tools and Methods**			
4.2.1	Use the available tools for coordination.	3	*e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination*	ALL

4.3	**Coordination Procedures**			
4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *e.g. release point*	ALL
4.3.2	Analyse effect of coordination requested by an adjacent position/ unit.	4	*e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit , When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
5	**ALTIMETRY AND LEVEL ALLOCATION**			
5.1	**Altimetry**			
5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.2	Ensure separation according to altimetry data.	4	*e.g. Transition level , transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
5.2	**Terrain Clearance**			
5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*e.g. Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude*	APP ACP
6	**SEPARATIONS**			
6.1	**Vertical Separation**			
6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, Level allocation, During climb/descent, Rate of climb/ descent, RVSM, non-RVSM aircraft	ACP ACS
6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *e.g. Level allocation, During climb/descent, Rate of climb/descent*	APP ACP APS ACS
6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS

6.2	**Horizontal Separation**			
6.2.1	Provide longitudinal separation.	4	Based on time, Based on distance (DME and/ or GNSS, RNAV), Based on time and ATS surveillance systems observation - European Region only *e.g. Based on time with Mach number technique*	ACP
6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030	ACP APP
6.2.3	Provide track separation.	4		ACP APP
6.2.4	Provide geographical separation.	4	Visual, Using navigation aids, Area Navigation	ACP APP
6.3	**Delegation of Separation**			
6.3.1	Provide contingency separation in the event of a navigation aid failure.	4	Vertical, Standard, Emergency	ACP APP
7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
7.1	**Airborne Collision Avoidance Systems**			
7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS *e.g. GPWS*	APP ACP APS ACS
8	**DATA DISPLAY**			
8.1	**Data Management**			
8.1.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
8.1.2	Analyse pertinent data on data displays.	4		ALL
8.1.3	Organise pertinent data on data displays.	4		ALL
8.1.4	Process pertinent data on data displays.	3		ALL
8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information *e.g. RPL, AFIL etc.*	ALL
8.1.6	Use flight plan information.	3		ALL
9	**OPERATIONAL ENVIRONMENT**			
9.1	**Integrity of the Operational Environment**			

9.1.1	Obtain information concerning the operational environment.	3	*e.g. Briefing, notices, local orders, verification of information*	ALL
9.1.2	Ensure the integrity of the operational environment.	4	*e.g. Integrity of displays, Verifcation of the information provided by displays, etc.*	APP ACP APS ACS
9.2	**Verification of the Currency of Operational Procedures**			
9.2.1	Check all relevant documentation before managing traffic.	3	*e.g. Briefing, LOAs, NOTAM, AICs*	ALL
9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS
9.3	**Handover - Takeover**			
9.3.1	Transfer information to the relieving controller.	3		ALL
9.3.2	Obtain information from the controller handing-over.	3		ALL
10	**PROVISION OF CONTROL SERVICE**			
10.1	**Responsibility and Processing of Information**			
10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.3	Obtain operational information.	3	ICAO Doc 4444, Local operation manuals	APP ACP APS ACS
10.1.4	Interpret operational information.	5		APP ACP APS ACS
10.1.5	Organise forwarding of operational information.	4	*e.g. including the use of backup procedures*	APP ACP APS ACS
10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
10.1.7	Ensure an adequate priority of actions.	4	formal and situational requirements, workload	APP ACP APS ACS
10.1.8	Balance the workload with the traffic demand.	5	*e.g. in own sector, in adjacent sectors*	APP ACP APS ACS
10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
10.2	**Area Control**			
10.2.1	Explain the responsibility for the provision of an area procedural control service.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals	ACP

10.2.2	Provide planning, coordination and control actions appropriate to the VFR and IFR in VMC and IMC.	4	ICAO Annex 2, ICAO Annex 11, ICAO Doc 4444	ACP

11 HOLDING

11.1 General Holding Procedures

11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
11.1.2	Appreciate the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.	3		APP ACP APS ACS

11.2 Vertical Separation

11.2.1	Provide vertical separation between aircraft in a holding pattern.	4		APP ACP APS ACS
11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft.	4		APP ACP APS ACS

11.3 Holding Aircraft

11.3.1	Calculate expected onward clearance times.	3		ACP ACS

Subject 4 : METEOROLOGY

The general objective is:

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

1	**METEOROLOGICAL PHENOMENA**			
1.1	**Meteorological Phenomena**			
1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Jetstreams, Clear Air Turbulence (CAT), Turbulence, Microburst, Severe mountain waves, Line squalls *e.g. Volcanic ash, Solar radiation*	ACP ACS
1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	*e.g. Separation, holding, diversions, re-routings, etc*	APP ACP APS ACS
1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	*e.g.Thunderstorm, Turbulence, Icing, Volcanic ash*	APP ACP APS ACS
1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS
2	**SOURCES OF METEOROLOGICAL DATA**			
2.1	**Sources of meteorological information**			
2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *e.g. AIREP/AIREP Special*	APP ACP APS ACS
2.1.2	Relay meteorological information	3	To: aircraft, MET office *e.g. flight information centre, adjacent ATS unit*	APP ACP APS ACS

Subject 5 : NAVIGATION

The general objective is:

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

1	**MAPS AND AERONAUTICAL CHARTS**			
1.1	**Maps and Charts**			
1.1.1	Use relevant maps and charts.	3		APP ACP APS ACS
2	**INSTRUMENTAL NAVIGATION**			
2.1	**Navigational Systems**			
2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*e.g. limitations, status of ground based and satelite based systems*	APP ACP APS ACS
2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*e.g. limitations, status, degraded procedures*	APP ACP APS ACS
2.2	**Navigational Assistance**			
2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*e.g. Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time*	APP ACP

Subject 6 : AIRCRAFT

The general objective is:

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

1	**AIRCRAFT INSTRUMENTS**			
1.1	**Aircraft Instruments**			
1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	*e.g. TCAS, wind shear indicator, weather radar*	ALL
1.1.2	Explain the operation of aircraft radio equipment.	2	*e.g. Radios (number of), emergency radios, SELCAL*	ALL
1.1.3	Explain the operation of transponder equipment.	2	Transponders: equipment Mode A, Mode C, Mode S	ALL
1.1.4	Explain the use and benefits of CPDLC.	2		ALL
2	**AIRCRAFT CATEGORIES**			
2.1	**Wake Turbulence Categories**			
2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
3	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**			
3.1	**Climb**			
3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*e.g. speed, mass, air density, wind and temperature*	APP ACP APS ACS
3.2	**Cruise**			
3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
3.3	**Descent**			
3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*e.g. wind, speed, rate of descent, cabin pressurisation*	ACP ACS
3.4	**Economic Factors**			
3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*e.g. Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile, Top of descent*	ACP ACS
3.4.2	Use continuous climb techniques where applicable.	3		ACP ACS

3.4.3	Use direct routing where applicable.	3		ACP ACS
3.5	**Miscellaneous Factors**			
3.5.1	Appreciate the influence of operational requirements.	3	*e.g. Military flying, Calibration flights, Aerial photography*	ADV ADI ACP ACS
4	**AIRCRAFT DATA**			
4.1	**Performance Data**			
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 a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
4.1.2	Identify potential or actual emergency situations.	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

i. recognise the necessity to constantly extend their knowledge;
ii. analyse factors which affect personal and team performance.

1	**PSYCHOLOGICAL FACTORS**			
1.1	**Cognitive**			
1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
1.1.3	Monitor the effect of human information processing factors on decision making.	3	*e.g. workload, stress, interpersonal relations, distraction, confidence*	ALL
2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
2.1	**Fatigue**			
2.1.1	State factors that cause fatigue.	1	Shift work *e.g. night shifts and rosters*	ALL
2.1.2	Describe the onset of fatigue.	2	*e.g. Lack of concentration, Listlessness, Irritability, Frustration*	ALL
2.1.3	Recognise the onset of fatigue in self.	1		ALL
2.1.4	Recognise the onset of fatigue in others.	1		ALL
2.1.5	Consider appropriate action when recognising fatigue.	2		ALL
2.2	**Fitness**			
2.2.1	Recognise signs of lack of personal fitness.	1		ALL
2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
3	**SOCIAL AND ORGANISATIONAL FACTORS**			
3.1	**Team Resource Management (TRM)**			
3.1.1	State the objectives of TRM.	1	*e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
3.1.2	State the content of the TRM concept.	1	*e.g. team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
3.2	**Teamwork and Team Roles**			

3.2.1	Identify reasons for conflict.	3		ALL
3.2.2	Describe actions to prevent human conflicts.	2	*e.g. TRM team roles*	ALL
3.2.3	Describe strategies to cope with human conflicts.	2	*e.g. in your team, in the simulator*	ALL
3.3	**Responsible behaviour**			
3.3.1	Consider the factors which influence responsible behaviour.	2	*e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
4	**STRESS**			
4.1	**Stress**			
4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
4.2	**Stress Management**			
4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
4.2.2	Obtain assistance in stressful situations.	3	*e.g. The benefits of offering,accepting and asking for help in stressful situations*	ALL
4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
4.2.5	Explain procedures used following an incident/accident.	2	*e.g. CISM, Counselling, Human element*	ALL
5	**HUMAN ERROR**			
5.1	**Human Error**			
5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
5.1.2	Differentiate between the types of error.	2	*e.g. Slips, Lapses, Mistakes*	ALL
5.1.3	Describe error-prone conditions.	2	*e.g. increase in traffic*	ALL
5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL

5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL
5.2	**Violation of rules**			
5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2		ALL
6	**WORKING METHODS**			
6.1	**Efficiency**			
6.1.1	Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.	2	*e.g. Own and others workload, OJT, customer requirements, economy, ecology, safety*	ALL
7	**WORKING KNOWLEDGE**			
7.1	**Controller Knowledge**			
7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	*e.g. Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*	ALL
8	**COLLABORATIVE WORK**			
8.1	**Communication**			
8.1.1	Use communication effectively in ATC.	3		ALL
8.2	**Collaborative work within the same area of responsibility**			
8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*e.g. Electronic, written, verbal and non-verbal communication*	ALL
8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*e.g. Strips legibility and encoding, Radar labels designation, Feedback*	ALL
8.2.3	List possible actions to provide a safe position hand over.	1	*e.g. rigour, preparation, overlap time*	ALL
8.2.4	Explain consequences of a missed position hand over process.	2		ALL
8.3	**Collaborative work between different areas of responsibility**			
8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*e.g. Other sectors constraints, electronic coordination tools*	ALL

8.4	**Controller/Pilot Cooperation**			
8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*e.g. workload, mutual knowledge, controller vs. pilot mental picture*	ALL
9	**WORK ENVIRONMENT**			
9.1	**Ergonomics**			
9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL
10	**ATC SAFETY MANAGEMENT**			
10.1	**Experience feedback**			
10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	*e.g. voluntary reporting*	ALL
10.1.2	Describe how reported occurrences are analysed.	2	*e.g. ESARR2, local procedures*	ALL
10.1.3	Name the means used to disseminate recommendations.	1	*e.g. Safety letters, safety boards web pages*	ALL
10.1.4	Explain the "Just Culture" concept.	2	benefits, prerequisites, constraints *e.g. EAM 2 GUI 6, GAIN Report*	ALL
10.2	**Safety investigation branch**			
10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
10.2.2	Define working methods of Safety Investigation Branch.	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

i. integrate knowledge and understanding of the basic working principles of equipment and systems and
ii. comply with the equipment and system degradation procedures in the provision of ATS.

1	**VOICE COMMUNICATIONS**			
1.1	**Radio Communications**			
1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures *e.g. Frequency selection, Stand-by equipment*	ALL
1.1.2	Identify indications of operational status of radio equipment.	3	*e.g. Indicator lights, Serviceability displays, Selector/frequency displays*	ALL
1.1.3	Consider radio range.	2	*e.g. Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range*	APP ACP APS ACS
1.2	**Other voice communications**			
1.2.1	Operate land line communications.	3	*e.g. telephone, interphone and intercom equipment*	ALL
2	**AUTOMATION IN ATS**			
2.1	**Aeronautical Fixed Telecommunication Network (AFTN)**			
2.1.1	Decode AFTN messages.	3	*e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
2.2	**Automatic Data Interchange**			
2.2.1	Use automatic data transfer equipment where available.	3	*e.g Sequencing systems, Automated information and coordination, OLDI*	ALL
3	**CONTROLLER WORKING POSITION**			
3.1	**General**			
3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	*e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF*	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL
3.2	**Situation displays and Information Systems**			
3.2.1	Use situation displays.	3		ALL

3.2.2	Check availability of information material.	3		ALL
3.2.3	Obtain the information from equipment.	3		APP ACP APS ACS
3.3	**Flight Data Systems**			
3.3.1	Use the flight data information at controller working position.	3		ALL
4	**FUTURE EQUIPMENT**			
4.1	**New Developments**			
4.1.1	Recognise future developments.	1	New advanced systems	ALL
5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
5.1	**General**			
5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL
5.2	**Communication equipment degradation**			
5.2.1	Identify that communication equipment has degraded.	3	*e.g. Ground-air and land line communications*	APP ACP APS ACS
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and land line communications, Alternative methods of transfering data	APP ACP APS ACS
5.3	**Navigational equipment degradation**			
5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*e.g. VOR, Navigational aids*	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	*e.g. Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*	ALL

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1	**PROFESSIONAL ENVIRONMENT**			
1.1	**Contributors to ATS operations**			
1.1.1	Characterise civil and military ATS activities.	2	*Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	*Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices*	ALL
1.2	**Customer Relations**			
1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	*e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*	ALL
1.3	**Environmental Protection**			
1.3.1	Describe processes used to ensure environmental protection.	2	*e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations*	ALL

Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

Learners shall develop professional attitudes to manage traffic in unusual, degraded and emergency situations.

1	**UNUSUAL/DEGRADED/EMERGENCY SITUATIONS**			
1.1	**General**			
1.1.1	List common unusual/degraded/ emergency situations.	1	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion*	ALL
1.1.2	Take into account the procedures for given unusual/degraded/ emergency situations.	2		ALL
1.1.3	Take into account that procedures don't exist for all unusual/ degraded/emergency situations.	2	*e.g. real life examples*	ALL
1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*e.g. Separation, Information, Coordination*	ALL
2	**SKILLS IMPROVEMENT**			
2.1	**Communication Effectiveness**			
2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Read back, Silence instruction	ALL
2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
2.2	**Avoidance of mental overload**			
2.2.1	Describe actions to keep the control of the situation.	2	*e.g. sector splitting, holding, flow management, task delegation*	ALL
2.2.2	Organise priority of actions.	4		ALL
2.2.3	Ensure an effective circulation of information.	4	*e.g. between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL
2.2.4	Consider asking for help.	2		ALL
2.3	**Air/Ground Cooperation**			
2.3.1	Collect appropriate information relevant for the situation.	3		ALL

2.3.2	Assist the pilot.	3	pilot workload *e.g. Instructions, information, support, human factors, etc.*	ALL

3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS

3.1 General

3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations* *Ambulance flights, GPWS alerts, airframe failure*	ADV APP ACP APS ACS

3.2 Radio failure

3.2.1	Describe the procedures followed by a pilot when he experiences complete or partial radio failure.	2	ICAO Doc 7030 *e.g. military procedures*	ALL
3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*e.g. Prolonged loss of communication*	ALL

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL

3.4 Strayed or Unidentified Aircraft

3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *e.g. Inside controlled airspace, Outside controlled airspace*	ALL
3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL

3.5 Diversions

3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, Distance, Other navigational assistance *e.g. Nearest most suitable aerodrome*	APP ACP APS ACS

Page intentionally left blank.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 6
Approach Control Surveillance Rating with Radar syllabus - APS (RDR)

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 6
Approach Control Surveillance Rating with Radar syllabus
APS (RAD)

Edition Number	**:**	**1.0**
Edition Date	**:**	**21/10/2008**
Status	**:**	**Released Issue**
Intended for	**:**	**EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 6 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the **Approach Control Surveillance Rating with Radar syllabus - APS (RAD)**.

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Rating phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Rating phase of Initial Training of ATCOs.

Rating training is defined as ***specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely -

- SUBJECT 1: Introduction to the Course (INTR)
- SUBJECT 2: Aviation Law (LAW)
- SUBJECT 3: Air Traffic Management (ATM)
- SUBJECT 4: Meteorology (MET)
- SUBJECT 5: Navigation (NAV)
- SUBJECT 6: Aircraft (ACFT)
- SUBJECT 7: Human Factors (HUM)
- SUBJECT 8: Equipment and Systems (EQPS)
- SUBJECT 9: Professional Environment (PEN)
- SUBJECT 10: Unusual/Degraded/Emergency Situations (UDES)
- SUBJECT 11: Aerodromes (AGA)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **APS (RAD) training course**, training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1 COURSE MANAGEMENT

1.1 Course Introduction

1.1.1	Explain the aims and main objectives of the course.	2		ALL

1.2 Course Administration

1.2.1	State course administration.	1		ALL

1.3 Study Material and Training Documentation

1.3.1	Use appropriate documentation and their sources for course studies.	3	*e.g. Training documentation, library, CBT library, Web, Learning Management Server*	ALL
1.3.2	Integrate appropriate information into course studies.	4	*e.g. Training documentation, supplementary information, library*	ALL

2 INTRODUCTION TO THE ATC TRAINING COURSE

2.1 Course Content and Organisation

2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study	ALL
2.1.2	State the subjects of the course and their purpose.	1		ALL
2.1.3	Describe the organisation of theoretical training.	2		ALL
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*	ALL

2.2 Training Ethos

2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL

2.3 The Assessment Process

2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

i. know, understand and apply the Rules of the Air and the Regulations regarding reporting, airspace and
ii. appreciate the Licensing and Competence principles.

1 ATC LICENSING / CERTIFICATE OF COMPETENCE

1.1 Privileges and Conditions

1.1.1	Appreciate the conditions which must be met for the issue of Approach Control Surveillance rating with Radar endorsement.	3	EU Community air traffic controller licence Directive, ESARR5 rating, valid rating *e.g. National documents, European Manual of Personnel Licensing - Air Traffic Controllers*	APS
1.1.2	Explain the conditions for suspension/revocation of ATCO license.	2	Incident/Accident, Competence in doubt, Medical	ALL

2 RULES AND REGULATIONS

2.1 Reports

2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*	ALL
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*	ALL
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*	ALL

2.2 Airspace

2.2.1	Appreciate classes and structure of airspace and their relevance to Approach Control Surveillance rating with Radar endorsement operations.	3		APS
2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*e.g. ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation*	ALL
2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT

1.1	**Air Traffic Control (ATC) Service**			
1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals	APP ACP APS ACS
1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS
1.2	**Flight Information Service (FIS)**			
1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information	APP ACP APS ACS
1.2.2	Provide FIS.	4	ICAO Doc 4444	ALL
1.2.3	Use radar for the provision of FIS.	3	ICAO Doc 4444, Information to identified aircraft concerning: traffic, navigation *e.g. weather*	APS ACS
1.3	**Alerting Service (ALRS)**			
1.3.1	Provide ALRS.	4	ICAO Doc 4444	ALL
1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10 ICAO Doc 4444	ALL
1.3.3	Use radar for the provision of ALRS.	3		APS ACS
1.4	**ATS System Capacity and Air Traffic Flow Management**			
1.4.1	Appreciate principles of ATFM.	3	*e.g. Working principles of ATFM, FUA, free flight, etc.*	APP ACP APS ACS
1.4.2	Apply flow management procedures.	3		APP ACP APS ACS
1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*e.g. 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
1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4		APP ACP APS ACS

1.4.5	Inform supervisor of situation.	3	*e.g. Abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), unusual meteorological conditions*	APP ACP APS ACS
1.4.6	Organise traffic flows and patterns to take account of ATS surveillance system capability.	4	*e.g. radar coverage*	APS ACS
1.5	**Airspace Management (ASM)**			
1.5.1	Appreciate the principles and means of ASM.	3	*e.g. FUA, ICAO Doc 4444, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs*	APP ACP APS ACS
2	**COMMUNICATION**			
2.1	**Effective Communication**			
2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
3.1	**ATC Clearances**			
3.1.1	Issue appropriate ATC clearances.	3		ALL
3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
3.1.3	Ensure the agreed course of action is carried out.	4		ALL
3.2	**ATC Instructions**			
3.2.1	Issue appropriate ATC instructions.	3		ALL
3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
3.2.3	Ensure the agreed course of action is carried out.	4		ALL

4 COORDINATION

4.1 Necessity

4.1.1	Identify the need for coordination.	3		ALL

4.2 Tools and Methods

4.2.1	Use the available tools for coordination.	3	*e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination*	ALL

4.3 Coordination Procedures

4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *e.g. release point*	ALL
4.3.2	Analyse effect of coordination requested by an adjacent position/ unit.	4	*e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit , When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL

5 ALTIMETRY AND LEVEL ALLOCATION

5.1 Altimetry

5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.2	Ensure separation according to altimetry data.	4	*e.g. Transition level , transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL

5.2 Terrain Clearance

5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*e.g. Minimum vectoring altitude, Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude*	APS ACS

6 SEPARATIONS

6.1 Vertical Separation

6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, Level allocation, During climb/descent, Rate of climb/ descent	APP APS
6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *e.g. Level allocation, During climb/descent, Rate of climb/descent*	APP ACP APS ACS
6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
6.1.4	Provide vertical separation in a surveillance environment.	4	pressure altitude-derived information, pilot level reports *e.g. Into/out of ATS surveillance system coverage*	APS ACS

6.2 Horizontal Separation

6.2.1	Provide longitudinal separation in a surveillance environment.	4	Speed control, Silent radar transfer *e.g. Within ATS surveillance system coverage*	APS

6.3 Delegation of Separation

6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3		APP APS

6.4 Wake Turbulence distance-based separation

6.4.1	Provide distance-based wake turbulence separation.	4		APS

6.5 Radar Separation

6.5.1	Describe how separation based on ATS surveillance systems is applied.	2	ICAO Doc 4444	APS
6.5.2	Provide radar separation.	4	ICAO Doc 4444, ICAO Doc 7030	APS

6.5.3	Provide radar separation by practising vectoring in a variety of situations.	4	*e.g. transit, meteorological phenomena, vectoring for approach, departure vs. transit vs. arrival*	APS

7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS

7.1 Airborne Collision Avoidance Systems

7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS *e.g. GPWS*	APP ACP APS ACS

7.2 Ground-based Safety Nets

7.2.1	Respond to ground-based safety nets warnings.	3	*e.g. STCA, MSAW, APW, APM*	APS ACS

8 DATA DISPLAY

8.1 Data Management

8.1.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
8.1.2	Analyse pertinent data on data displays.	4		ALL
8.1.3	Organise pertinent data on data displays.	4		ALL
8.1.4	Process pertinent data on data displays.	3		ALL
8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information *e.g. RPL, AFIL etc.*	ALL
8.1.6	Use flight plan information.	3		ALL

9 OPERATIONAL ENVIRONMENT

9.1 Integrity of the Operational Environment

9.1.1	Obtain information concerning the operational environment.	3	*e.g. Briefing, notices, local orders, verification of information*	ALL
9.1.2	Ensure the integrity of the operational environment.	4	*e.g. Integrity of displays, Verifcation of the information provided by displays, etc.*	APP ACP APS ACS

9.2 Verification of the Currency of Operational Procedures

9.2.1	Check all relevant documentation before managing traffic.	3	*e.g. Briefing, LOAs, NOTAM, AICs*	ALL

9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS
9.3	**Handover - Takeover**			
9.3.1	Transfer information to the relieving controller.	3		ALL
9.3.2	Obtain information from the controller handing-over.	3		ALL

10 PROVISION OF CONTROL SERVICE

10.1	**Responsibility and Processing of Information**			
10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.3	Obtain operational information.	3	ICAO Doc 4444, Local operation manuals	APP ACP APS ACS
10.1.4	Interpret operational information.	5		APP ACP APS ACS
10.1.5	Organise forwarding of operational information.	4	*e.g. including the use of backup procedures*	APP ACP APS ACS
10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
10.1.7	Ensure an adequate priority of actions.	4	formal and situational requirements, workload	APP ACP APS ACS
10.1.8	Balance the workload with the traffic demand.	5	*e.g. in own sector, in adjacent sectors*	APP ACP APS ACS
10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
10.2	**ATS Surveillance Service with Radar**			
10.2.1	Explain the responsibility for the provision of ATS surveillance service appropriate to APS rating with Radar endorsement.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals	APS
10.2.2	Explain the functions that may be performed with the use of radar-derived information presented on a situation display.	2	ICAO Doc 4444	APS

10.2.3	Provide planning, coordination and control actions appropriate to the VFR, SVFR and IFR in VMC and IMC.	4	ICAO Annex 2, ICAO Annex 11, ICAO Doc 4444	APS
10.2.4	Apply the procedures for termination of ATS surveillance service.	3	ICAO Doc 4444 *e.g. transfer of control, termination or interruption of ATS surveillance service*	APS ACS
10.3 Vectoring				
10.3.1	Define flight path monitoring and vectoring.	1	ICAO Doc 4444	APS ACS
10.3.2	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444	APS ACS
10.3.3	Provide vectoring.	4	ICAO Doc 4444 *e.g. separation, expediting arrivals, departures and/ or climb to cruising levels, navigation assistance, uncontrolled airspace, etc.*	APS ACS
10.3.4	Apply the procedures for termination of vectoring.	3	ICAO Doc 4444	APS ACS
10.4 Control service with advanced systems support				
10.4.1	Explain the impact of advanced systems on the provision of control service.	2	*e.g. conflict detection*	APS ACS

11 HOLDING

11.1 General Holding Procedures				
11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
11.1.2	Appreciate the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.	3		APP ACP APS ACS
11.2 Vertical Separation				
11.2.1	Provide vertical separation between aircraft in a holding pattern.	4		APP ACP APS ACS
11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft.	4		APP ACP APS ACS
11.3 Approaching Aircraft				

11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3		APP APS
11.3.2	Organise the traffic landing sequence in a holding pattern.	4	*e.g. company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management*	APP APS

11.4 Holding in a Surveillance Environment

11.4.1	Provide vectors to aircraft leaving a holding pattern.	4		APS ACS
11.4.2	Organise traffic to separate other aircraft from holding aircraft.	4		APS ACS
11.4.3	Ensure identity of aircraft leaving a holding pattern.	4		APS ACS
11.4.4	Integrate system support, when available.	4	*e.g. arrival management system, automated holding lists, vertical traffic displays*	APS ACS

12 IDENTIFICATION

12.1 Establishment of Identification

12.1.1	Apply the methods of establishing identification.	3	ICAO Doc 4444, SSR *e.g. PSR*	APS ACS
12.1.2	Appreciate the precautions when establishing identification.	3	ICAO Doc 4444, SSR *e.g. PSR*	APS ACS
12.1.3	Apply procedures in the case of misidentification.	3		APS ACS

12.2 Maintenance of Identification

12.2.1	Appreciate the necessity to maintain identification.	3		APS ACS

12.3 Loss of Identity

12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	*e.g. Out of radar coverage, loss of ATS surveillance service, weather clutter, other clutter, garbling, etc.*	APS ACS
12.3.2	Apply methods to re-establish identification.	3		APS ACS
12.3.3	Respond to loss/doubt concerning identification.	3	*e.g. procedural separation*	APS ACS

12.4 Position Information

12.4.1	Appreciate the circumstances when position information should be passed to the aircraft.	3		APS ACS

12.4.2	State the format in which position information can be passed to aircraft.	1	ICAO Doc 4444	APS ACS

12.5 Transfer of Identity

12.5.1	Apply the methods of transfer of identification.	3		APS ACS
12.5.2	Appreciate the precautions when transferring identification.	3		APS ACS

Subject 4 : METEOROLOGY

The general objective is:

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

1 METEOROLOGICAL PHENOMENA

1.1 Meteorological Phenomena

1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Clear Air Turbulence (CAT), Turbulence, Microburst, Windshear, Severe mountain waves, Line squalls *e.g. Volcanic ash*	APP APS
1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	*e.g. Separation, holding, diversions, re-routings, etc*	APP ACP APS ACS
1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	*e.g.Thunderstorm, Turbulence, Icing, Volcanic ash*	APP ACP APS ACS
1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS

2 SOURCES OF METEOROLOGICAL DATA

2.1 Sources of meteorological information

2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *e.g. AIREP/AIREP Special*	APP ACP APS ACS
2.1.2	Relay meteorological information	3	To: aircraft, MET office *e.g. flight information centre, adjacent ATS unit*	APP ACP APS ACS

Subject 5 : NAVIGATION

The general objective is:

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

1 MAPS AND AERONAUTICAL CHARTS

1.1 Maps and Charts

1.1.1	Use relevant maps and charts.	3		APP ACP APS ACS

2 INSTRUMENTAL NAVIGATION

2.1 Navigational Systems

2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*e.g. limitations, status of ground based and satelite based systems*	APP ACP APS ACS
2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*e.g. limitations, status, degraded procedures*	APP ACP APS ACS

2.2 Navigational Assistance

2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*e.g. Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time*	APS ACS
2.2.2	Assist aircraft in navigation when required.	3	Aircraft observed to be deviating from its known intended route, on request	APS ACS

2.3 Satellite-based Systems

2.3.1	State the different operations associated with satellite-based systems.	1	*e.g. NPA, APV-baro VNAV, APV, LPV, Precision approach, ICAO Doc 8168 Vol.2*	ADI APP APS

Subject 6 : AIRCRAFT

The general objective is:

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

1 AIRCRAFT INSTRUMENTS

1.1 Aircraft Instruments

1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	*e.g. TCAS, wind shear indicator, weather radar*	ALL
1.1.2	Explain the operation of aircraft radio equipment.	2	*e.g. Radios (number of), emergency radios, SELCAL*	ALL
1.1.3	Explain the operation of transponder equipment.	2	Transponders: equipment Mode A, Mode C, Mode S	ALL
1.1.4	Explain the use and benefits of CPDLC.	2		ALL

2 AIRCRAFT CATEGORIES

2.1 Wake Turbulence Categories

2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL

2.2 ICAO Approach Categories

2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168	APP APS
2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3		APP APS

3 FACTORS AFFECTING AIRCRAFT PERFORMANCE

3.1 Climb

3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*e.g. speed, mass, air density, wind and temperature*	APP ACP APS ACS
3.1.2	Appreciate the influence of factors affecting aircraft on takeoff.	3	*e.g. Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass*	APP APS

3.2 Cruise

3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
3.3	**Descent and Initial Approach**			
3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*e.g. wind, speed, rate of descent, aircraft configuration, cabin pressurisation*	APP APS
3.4	**Final Approach and Landing**			
3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*e.g. Wind, Aircraft configuration, Mass, Meteorological conditions, Runway conditions, Runway slope, Aerodrome elevation*	APP APS
3.5	**Economic Factors**			
3.5.1	Integrate consideration of economic factors affecting aircraft.	4	*e.g. Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile*	APP APS
3.5.2	Use continuous climb techniques where applicable.	3		APP APS
3.5.3	Use direct routing where applicable.	3		APP APS
3.6	**Miscellaneous Factors**			
3.6.1	Appreciate the influence of operational requirements.	3	*e.g. Military flying, Calibration flights, Aerial photography*	APP APS
3.7	**Ecological Factors**			
3.7.1	Estimate the influence of ecological factors affecting aircraft.	3	*e.g. Fuel dumping, Noise abatement procedures, Minimum flight levels, Bird hazard, Continuous Descent Approach*	APP APS
4	**AIRCRAFT DATA**			
4.1	**Performance Data**			
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 a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
4.1.2	Identify potential or actual emergency situations.	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

i. recognise the necessity to constantly extend their knowledge;
ii. analyse factors which affect personal and team performance.

1 PSYCHOLOGICAL FACTORS

1.1 Cognitive

1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
1.1.3	Monitor the effect of human information processing factors on decision making.	3	*e.g. workload, stress, interpersonal relations, distraction, confidence*	ALL

2 MEDICAL AND PHYSIOLOGICAL FACTORS

2.1 Fatigue

2.1.1	State factors that cause fatigue.	1	Shift work *e.g. night shifts and rosters*	ALL
2.1.2	Describe the onset of fatigue.	2	*e.g. Lack of concentration, Listlessness, Irritability, Frustration*	ALL
2.1.3	Recognise the onset of fatigue in self.	1		ALL
2.1.4	Recognise the onset of fatigue in others.	1		ALL
2.1.5	Consider appropriate action when recognising fatigue.	2		ALL

2.2 Fitness

2.2.1	Recognise signs of lack of personal fitness.	1		ALL
2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL

3 SOCIAL AND ORGANISATIONAL FACTORS

3.1 Team Resource Management (TRM)

3.1.1	State the objectives of TRM.	1	*e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL

3.1.2	State the content of the TRM concept.	1	*e.g. team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
3.2	**Teamwork and Team Roles**			
3.2.1	Identify reasons for conflict.	3		ALL
3.2.2	Describe actions to prevent human conflicts.	2	*e.g. TRM team roles*	ALL
3.2.3	Describe strategies to cope with human conflicts.	2	*e.g. in your team, in the simulator*	ALL
3.3	**Responsible behaviour**			
3.3.1	Consider the factors which influence responsible behaviour.	2	*e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
4	**STRESS**			
4.1	**Stress**			
4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
4.2	**Stress Management**			
4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
4.2.2	Obtain assistance in stressful situations.	3	*e.g. The benefits of offering,accepting and asking for help in stressful situations*	ALL
4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
4.2.5	Explain procedures used following an incident/accident.	2	*e.g. CISM, Counselling, Human element*	ALL
5	**HUMAN ERROR**			
5.1	**Human Error**			
5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
5.1.2	Differentiate between the types of error.	2	*e.g. Slips, Lapses, Mistakes*	ALL

5.1.3	Describe error-prone conditions.	2	*e.g. increase in traffic*	ALL
5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL
5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL

5.2 Violation of rules

5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2		ALL

6 WORKING METHODS

6.1 Efficiency

6.1.1	Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.	2	*e.g. Own and others workload, OJT, customer requirements, economy, ecology, safety*	ALL

7 WORKING KNOWLEDGE

7.1 Controller Knowledge

7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	*e.g. Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*	ALL

8 COLLABORATIVE WORK

8.1 Communication

8.1.1	Use communication effectively in ATC.	3		ALL

8.2 Collaborative work within the same area of responsibility

8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*e.g. Electronic, written, verbal and non-verbal communication*	ALL
8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*e.g. Strips legibility and encoding, Radar labels designation, Feedback*	ALL

8.2.3	List possible actions to provide a safe position hand over.	1	*e.g. rigour, preparation, overlap time*	ALL
8.2.4	Explain consequences of a missed position hand over process.	2		ALL

8.3 Collaborative work between different areas of responsibility

8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*e.g. Other sectors constraints, electronic coordination tools*	ALL

8.4 Controller/Pilot Cooperation

8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*e.g. workload, mutual knowledge, controller vs. pilot mental picture*	ALL

9 WORK ENVIRONMENT

9.1 Ergonomics

9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL

10 ATC SAFETY MANAGEMENT

10.1 Experience feedback

10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	*e.g. voluntary reporting*	ALL
10.1.2	Describe how reported occurrences are analysed.	2	*e.g. ESARR2, local procedures*	ALL
10.1.3	Name the means used to disseminate recommendations.	1	*e.g. Safety letters, safety boards web pages*	ALL
10.1.4	Explain the "Just Culture" concept.	2	benefits, prerequisites, constraints *e.g. EAM 2 GUI 6, GAIN Report*	ALL

10.2 Safety investigation branch

10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
10.2.2	Define working methods of Safety Investigation Branch.	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

i. integrate knowledge and understanding of the basic working principles of equipment and systems and
ii. comply with the equipment and system degradation procedures in the provision of ATS.

1 VOICE COMMUNICATIONS				
1.1 Radio Communications				
1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures *e.g. Frequency selection, Stand-by equipment*	ALL
1.1.2	Identify indications of operational status of radio equipment.	3	*e.g. Indicator lights, Serviceability displays, Selector/frequency displays*	ALL
1.1.3	Consider radio range.	2	*e.g. Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range*	APP ACP APS ACS
1.2 Other voice communications				
1.2.1	Operate land line communications.	3	*e.g. telephone, interphone and intercom equipment*	ALL
2 AUTOMATION IN ATS				
2.1 Aeronautical Fixed Telecommunication Network (AFTN)				
2.1.1	Decode AFTN messages.	3	*e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
2.2 Automatic Data Interchange				
2.2.1	Use automatic data transfer equipment where available.	3	*e.g Sequencing systems, Automated information and coordination, OLDI*	ALL
3 CONTROLLER WORKING POSITION				
3.1 General				
3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	*e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF*	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL
3.2 Situation displays and Information Systems				

3.2.1	Use situation displays.	3		ALL
3.2.2	Check availability of information material.	3		ALL
3.2.3	Obtain the information from equipment.	3		APP ACP APS ACS
3.3	**Flight Data Systems**			
3.3.1	Use the flight data information at controller working position.	3		ALL
3.4	**Use of Radars**			
3.4.1	Operate radar equipment.	3		APS ACS
3.4.2	Analyse the information provided by the radar equipment.	4		APS ACS
3.4.3	Assign codes.	4		APS ACS
3.4.4	Appreciate the use of Mode S.	3		APS ACS
3.5	**Advanced systems**			
3.5.1	Use controller pilot datalink communications when available.	3		APS ACS
3.5.2	Use the information provided by advanced systems, when available.	3	*e.g. trajectory-based information, MTCD, MONA, etc.*	APS ACS
4	**FUTURE EQUIPMENT**			
4.1	**New Developments**			
4.1.1	Recognise future developments.	1	New advanced systems	ALL
5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
5.1	**General**			
5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL
5.2	**Communication equipment degradation**			

5.2.1	Identify that communication equipment has degraded.	3	*e.g. Ground-air and land line communications*	APP ACP APS ACS
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and land line communications, Alternative methods of transfering data	APP ACP APS ACS
5.3	**Navigational equipment degradation**			
5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*e.g. VOR, Navigational aids*	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	*e.g. Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*	ALL
5.4	**Surveillance equipment degradation**			
5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, Loss of certain facilities, Total failure	APS ACS
5.4.2	Integrate contingency procedures in the event of surveillance equipment degradation.	4	*e.g. Inform adjacent sectors, Inform aircraft, Apply vertical separation (emergency, increased), Increased radar separation, Reduce the number of aircraft entering area of responsibility, Transfer aircraft to another unit*	APS ACS
5.5	**ATC Processing System degradation**			
5.5.1	Identify a processing system degradation.	3	*e.g. FDPS, RDPS, Software processing of situation display*	APS ACS
5.5.2	Integrate contingency procedures in the event of a processing system degradation.	4		APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1 PROFESSIONAL ENVIRONMENT

1.1	**Contributors to ATS operations**			
1.1.1	Characterise civil and military ATS activities.	2	*Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	*Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices*	ALL
1.2	**Customer Relations**			
1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	*e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*	ALL
1.3	**Environmental Protection**			
1.3.1	Describe processes used to ensure environmental protection.	2	*e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations*	ALL

Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

Learners shall develop professional attitudes to manage traffic in unusual, degraded and emergency situations.

1 UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

1.1 General

1.1.1	List common unusual/degraded/ emergency situations.	1	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion*	ALL
1.1.2	Take into account the procedures for given unusual/degraded/ emergency situations.	2		ALL
1.1.3	Take into account that procedures don't exist for all unusual/ degraded/emergency situations.	2	*e.g. real life examples*	ALL
1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*e.g. Separation, Information, Coordination*	ALL

2 SKILLS IMPROVEMENT

2.1 Communication Effectiveness

2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Read back, Silence instruction	ALL
2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL

2.2 Avoidance of mental overload

2.2.1	Describe actions to keep the control of the situation.	2	*e.g. sector splitting, holding, flow management, task delegation*	ALL
2.2.2	Organise priority of actions.	4		ALL
2.2.3	Ensure an effective circulation of information.	4	*e.g. between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL
2.2.4	Consider asking for help.	2		ALL

2.3 Air/Ground Cooperation

2.3.1	Collect appropriate information relevant for the situation.	3		ALL
2.3.2	Assist the pilot.	3	pilot workload *e.g. Instructions, information, support, human factors, etc.*	ALL

3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS

3.1 General

3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations* *Ambulance flights, GPWS alerts, airframe failure*	ADV APP ACP APS ACS

3.2 Radio failure

3.2.1	Describe the procedures followed by a pilot when he experiences complete or partial radio failure.	2	ICAO Doc 7030 *e.g. military procedures*	ALL
3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*e.g. Prolonged loss of communication*	ALL

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL

3.4 Strayed or Unidentified Aircraft

3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *e.g. Inside controlled airspace, Outside controlled airspace*	ALL
3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL

3.5 Diversions

3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, Distance, Other navigational assistance *e.g. Nearest most suitable aerodrome*	APP ACP APS ACS

3.6 Transponder failure

3.6.1	Apply procedures in the event of a SSR transponder failure.	3	ICAO Doc 4444, ICAO Doc 7030 *e.g. total/partial failure*	APS ACS

Subject 11: AERODROMES

The general objective is:

Learners shall recognise and understand the design and layout of Aerodromes.

1 GENERAL

1.1 Definitions

1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 *e.g. AIP*	APP APS ADV ADI
1.1.2	Define aerodrome data.	1	ICAO Annex 14 *e.g. Aerodrome elevation, Reference point, Apron, Movement area, Manoeuvring area, Hot spot*	ADV ADI APP APS

1.2 Coordination

1.2.1	Identify the information that has to be passed between Air Traffic Services (ATS) and the airport authority.	3	Airport conditions, Fire/rescue category, Condition of ground equipment and NAVAIDs, AIRAC, ICAO Annex 14	APP APS ADV ADI

2 MOVEMENT AREA

2.1 Movement Area

2.1.1	Describe movement area.	2	ICAO Annex 14	ADV ADI APP APS
2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights	ADV ADI APP APS
2.1.3	Identify the information on conditions of the movement area that have to be passed to aircraft.	3	Essential information on aerodrome conditions	ADV ADI APP APS

2.2 Manoeuvring Area

2.2.1	Describe manoeuvring area.	2	ICAO Annex 14	ADV ADI APP APS
2.2.2	Describe taxiway.	2		ADV ADI APP APS
2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS

2.3 Runways

2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways	ADV ADI APP APS
2.3.2	Describe instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.3	Describe non-instrument runway.	2	ICAO Annex 14	ADV ADI APP APS
2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	ADV ADI APP APS
2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	ADV ADI APP APS
2.3.6	Describe the daylight markings on runways.	2	*e.g. Runway Designator, Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour*	ADV ADI APP APS
2.3.7	Describe runway lights.	2	*e.g. Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes*	ADV ADI APP APS
2.3.8	Explain the functions of visual landing aids.	2	*e.g. AVASI, VASI, PAPI*	ADV ADI APP APS
2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, Stroboscopic lights, Colours, Intensity and brightness	ADV ADI APP APS
2.3.10	Characterise the effect of water/ice on runways.	2		ADV ADI APP APS
2.3.11	Explain braking action.	2	Braking action coefficient	ADV ADI APP APS
2.3.12	Explain the effect of runway visual range on aerodrome operation	2		ADV ADI APP APS

3 OBSTACLES

3.1 General

3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS

4 MISCELLANEOUS EQUIPMENT

4.1 Location

4.1.1	Explain the location of different aerodrome ground equipment.	2	*e.g. LLZ, GLD, VDF, radiocommunication or radar antennas, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

Page intentionally left blank.

Page intentionally left blank.

Page intentionally left blank.

EUROCONTROL
SPECIFICATION

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

Annex 7
Area Control Surveillance Rating with Radar syllabus - ACS (RDR)

Edition 1.0
Edition date: 21.10.2008
Reference nr: EUROCONTROL-SPEC-0113

EUROCONTROL

EUROCONTROL

EUROCONTROL Specification for the ATCO Common Core Content Initial Training

ANNEX 7
Area Control Surveillance Rating with Radar syllabus
ACS (RAD)

Edition Number	**:**	**1.0**
Edition Date	**:**	**21/10/2008**
Status	**:**	**Released Issue**
Intended for	**:**	**EATM Stakeholders**

Page intentionally left blank.

CONTENTS

Page intentionally left blank.

EXECUTIVE SUMMARY

Annex 7 of the EUROCONTROL Specification for the ATCO Common Core Content Initial Training details the training objectives for the **Area Control Surveillance Rating with Radar syllabus - ACS (RAD)**.

This syllabus is, in accordance with **ESARR5 – ATM Services' Personnel**, the mandatory minimum training requirement to be applied, by all European Civil Aviation Conference (ECAC) Member States, during the Rating phase of Initial Training of ATCOs.

In addition, for EC Member States, these objectives are referenced in **Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence**, as the minimum training standard to be included in the Rating phase of Initial Training of ATCOs.

Rating training is defined as ***specialised ATC training to provide knowledge and skills related to a job category and appropriate to the discipline to be pursued in the ATS environment***.

The composition and topics were chosen based on the ICAO Annex 1 requirements for an Air Traffic Control licence. The structure of the syllabus reflects a logical grouping of objectives into coherent subjects, namely -

- SUBJECT 1: Introduction to the Course (INTR)
- SUBJECT 2: Aviation Law (LAW)
- SUBJECT 3: Air Traffic Management (ATM)
- SUBJECT 4: Meteorology (MET)
- SUBJECT 5: Navigation (NAV)
- SUBJECT 6: Aircraft (ACFT)
- SUBJECT 7: Human Factors (HUM)
- SUBJECT 8: Equipment and Systems (EQPS)
- SUBJECT 9: Professional Environment (PEN)
- SUBJECT 10: Unusual/Degraded/Emergency Situations (UDES)

The order of subjects and objectives is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance. No recommendation is made in this area. When teaching the objectives, it is envisaged that different training methodologies will be used.

Prior to developing or updating the **ACS (RAD) training course**, training providers must be familiar with the information contained in the EUROCONTROL Specification for the ATCO Common Core Content Initial Training, particularly Section 8 (How to use this document) which contains, amongst other items, the fundamental principles that are applied to the Specification.

Page intentionally left blank.

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1	**COURSE MANAGEMENT**			
1.1	**Course Introduction**			
1.1.1	Explain the aims and main objectives of the course.	2		ALL
1.2	**Course Administration**			
1.2.1	State course administration.	1		ALL
1.3	**Study Material and Training Documentation**			
1.3.1	Use appropriate documentation and their sources for course studies.	3	*e.g. Training documentation, library, CBT library, Web, Learning Management Server*	ALL
1.3.2	Integrate appropriate information into course studies.	4	*e.g. Training documentation, supplementary information, library*	ALL
2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
2.1	**Course Content and Organisation**			
2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study	ALL
2.1.2	State the subjects of the course and their purpose.	1		ALL
2.1.3	Describe the organisation of theoretical training.	2		ALL
2.1.4	Describe the organisation of practical training.	2	*e.g. PTP, Simulation, Briefing, Debriefing*	ALL
2.2	**Training Ethos**			
2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL
2.3	**The Assessment Process**			
2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

i. know, understand and apply the Rules of the Air and the Regulations regarding reporting, airspace and
ii. appreciate the Licensing and Competence principles.

1 ATC LICENSING / CERTIFICATE OF COMPETENCE

1.1 Privileges and Conditions

1.1.1	Appreciate the conditions which must be met for the issue of Area Control Surveillance rating with Radar endorsement.	3	EU Community air traffic controller licence Directive, ESARR5 rating, valid rating *e.g. National documents, European Manual of Personnel Licensing - Air Traffic Controllers*	ACS
1.1.2	Explain the conditions for suspension/revocation of ATCO license.	2	Incident/Accident, Competence in doubt, Medical	ALL

2 RULES AND REGULATIONS

2.1 Reports

2.1.1	List the standard forms for reports.	1	Air traffic incident report *e.g. routine air reports, breach of regulations, watch/log book, records*	ALL
2.1.2	Describe the functions of, and processes for, reporting.	2	ESARR 2, Reporting culture, Air traffic incident report *e.g. breach of regulations, watch/log book, records, voluntary reporting*	ALL
2.1.3	Use forms for reporting.	3	Air traffic incident reporting form/s *e.g. ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records*	ALL

2.2 Airspace

2.2.1	Appreciate classes and structure of airspace and their relevance to Area Control Surveillance rating with Radar endorsement operations.	3		ACS
2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*e.g. ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation*	ALL
2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1	**AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT**			
1.1	**Air Traffic Control (ATC) Service**			
1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals	APP ACP APS ACS
1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS
1.2	**Flight Information Service (FIS)**			
1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information	APP ACP APS ACS
1.2.2	Provide FIS.	4	ICAO Doc 4444	ALL
1.2.3	Use radar for the provision of FIS.	3	ICAO Doc 4444, Information to identified aircraft concerning: traffic, navigation *e.g. weather*	APS ACS
1.3	**Alerting Service (ALRS)**			
1.3.1	Provide ALRS.	4	ICAO Doc 4444	ALL
1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10 ICAO Doc 4444	ALL
1.3.3	Use radar for the provision of ALRS.	3		APS ACS
1.4	**ATS System Capacity and Air Traffic Flow Management**			
1.4.1	Appreciate principles of ATFM.	3	*e.g. Working principles of ATFM, FUA, free flight, etc.*	APP ACP APS ACS
1.4.2	Apply flow management procedures.	3		APP ACP APS ACS
1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*e.g. 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
1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4		APP ACP APS ACS

1.4.5	Inform supervisor of situation.	3	*e.g. Abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), unusual meteorological conditions*	APP ACP APS ACS
1.4.6	Organise traffic flows and patterns to take account of ATS surveillance system capability.	4	*e.g. radar coverage*	APS ACS
1.5	**Airspace Management (ASM)**			
1.5.1	Appreciate the principles and means of ASM.	3	*e.g. FUA, ICAO Doc 4444, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs*	APP ACP APS ACS
1.5.2	Organise traffic to take account of ASM.	4		ACP ACS
2	**COMMUNICATION**			
2.1	**Effective Communication**			
2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *e.g. ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback	ALL
2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
3.1	**ATC Clearances**			
3.1.1	Issue appropriate ATC clearances.	3		ALL
3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
3.1.3	Ensure the agreed course of action is carried out.	4		ALL
3.2	**ATC Instructions**			
3.2.1	Issue appropriate ATC instructions.	3		ALL
3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
3.2.3	Ensure the agreed course of action is carried out.	4		ALL

4 COORDINATION

4.1 Necessity

4.1.1	Identify the need for coordination.	3		ALL

4.2 Tools and Methods

4.2.1	Use the available tools for coordination.	3	*e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination*	ALL

4.3 Coordination Procedures

4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *e.g. release point*	ALL
4.3.2	Analyse effect of coordination requested by an adjacent position/ unit.	4	*e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit , When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL

5 ALTIMETRY AND LEVEL ALLOCATION

5.1 Altimetry

5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.2	Ensure separation according to altimetry data.	4	*e.g. Transition level , transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL

5.2 Terrain Clearance

5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*e.g. Minimum vectoring altitude, Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude*	APS ACS

6 SEPARATIONS

6.1 Vertical Separation

6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, Level allocation, During climb/descent, Rate of climb/ descent, RVSM, non-RVSM aircraft	ACP ACS
6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *e.g. Level allocation, During climb/descent, Rate of climb/descent*	APP ACP APS ACS
6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
6.1.4	Provide vertical separation in a surveillance environment.	4	pressure altitude-derived information, pilot level reports *e.g. Into/out of ATS surveillance system coverage*	APS ACS

6.2 Horizontal Separation

6.2.1	Provide longitudinal separation in a surveillance environment.	4	Speed control, Mach number techniques, Silent radar transfer *e.g. Within ATS surveillance system coverage*	ACS

6.3 Wake Turbulence distance-based separation

6.3.1	Provide distance-based wake turbulence separation.	4		ACS

6.4 Radar Separation

6.4.1	Describe how separation based on ATS surveillance systems is applied.	2	ICAO Doc 4444	ACS
6.4.2	Provide radar separation.	4	ICAO Doc 4444, ICAO Doc 7030	ACS
6.4.3	Provide radar separation by vectoring in a variety of situations.	4	*e.g. transit, meteorological phenomena, vectoring for approach, departure vs. transit vs. arrival*	ACS

7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS

7.1 Airborne Collision Avoidance Systems

7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS *e.g. GPWS*	APP ACP APS ACS

7.2 Ground-based Safety Nets

7.2.1	Respond to ground-based safety nets warnings.	3	*e.g. STCA, MSAW, APW, APM*	APS ACS

8 DATA DISPLAY

8.1 Data Management

8.1.1	Update the data display to accurately reflect the traffic situation.	3	*e.g. Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
8.1.2	Analyse pertinent data on data displays.	4		ALL
8.1.3	Organise pertinent data on data displays.	4		ALL
8.1.4	Process pertinent data on data displays.	3		ALL
8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information *e.g. RPL, AFIL etc.*	ALL
8.1.6	Use flight plan information.	3		ALL

9 OPERATIONAL ENVIRONMENT

9.1 Integrity of the Operational Environment

9.1.1	Obtain information concerning the operational environment.	3	*e.g. Briefing, notices, local orders, verification of information*	ALL
9.1.2	Ensure the integrity of the operational environment.	4	*e.g. Integrity of displays, Verifcation of the information provided by displays, etc.*	APP ACP APS ACS

9.2 Verification of the Currency of Operational Procedures

9.2.1	Check all relevant documentation before managing traffic.	3	*e.g. Briefing, LOAs, NOTAM, AICs*	ALL
9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS

9.3 Handover - Takeover

9.3.1	Transfer information to the relieving controller.	3		ALL
9.3.2	Obtain information from the controller handing-over.	3		ALL

10 PROVISION OF CONTROL SERVICE

10.1 Responsibility and Processing of Information

10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	APP ACP APS ACS
10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444	APP ACP APS ACS

10.1.3	Obtain operational information.	3	ICAO Doc 4444, Local operation manuals	APP ACP APS ACS
10.1.4	Interpret operational information.	5		APP ACP APS ACS
10.1.5	Organise forwarding of operational information.	4	*e.g. including the use of backup procedures*	APP ACP APS ACS
10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
10.1.7	Ensure an adequate priority of actions.	4	formal and situational requirements, workload	APP ACP APS ACS
10.1.8	Balance the workload with the traffic demand.	5	*e.g. in own sector, in adjacent sectors*	APP ACP APS ACS
10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
10.2	**ATS Surveillance Service with Radar**			
10.2.1	Explain the responsibility for the provision of ATS surveillance service appropriate to ACS rating with Radar endorsement.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals	ACS
10.2.2	Explain the functions that may be performed with the use of radar-derived information presented on a situation display.	2	ICAO Doc 4444	ACS
10.2.3	Provide planning, coordination and control actions appropriate to the VFR and IFR in VMC and IMC.	4	ICAO Annex 2, ICAO Annex 11, ICAO Doc 4444	ACS
10.2.4	Apply the procedures for termination of ATS surveillance service.	3	ICAO Doc 4444 *e.g. transfer of control, termination or interruption of ATS surveillance service*	APS ACS
10.3	**Vectoring**			
10.3.1	Define flight path monitoring and vectoring.	1	ICAO Doc 4444	APS ACS
10.3.2	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444	APS ACS
10.3.3	Provide vectoring.	4	ICAO Doc 4444 *e.g. separation, expediting arrivals, departures and/ or climb to cruising levels, navigation assistance, uncontrolled airspace, etc.*	APS ACS
10.3.4	Apply the procedures for termination of vectoring.	3	ICAO Doc 4444	APS ACS

10.4	**Control service with advanced systems support**			
10.4.1	Explain the impact of advanced systems on the provision of control service.	2	*e.g. conflict detection*	APS ACS
11	**HOLDING**			
11.1	**General Holding Procedures**			
11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
11.1.2	Appreciate the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.	3		APP ACP APS ACS
11.2	**Vertical Separation**			
11.2.1	Provide vertical separation between aircraft in a holding pattern.	4		APP ACP APS ACS
11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft.	4		APP ACP APS ACS
11.3	**Holding Aircraft**			
11.3.1	Calculate expected onward clearance times.	3		ACP ACS
11.4	**Holding in a Surveillance Environment**			
11.4.1	Provide vectors to aircraft leaving a holding pattern.	4		APS ACS
11.4.2	Organise traffic to separate other aircraft from holding aircraft.	4		APS ACS
11.4.3	Ensure identity of aircraft leaving a holding pattern.	4		APS ACS
11.4.4	Integrate system support, when available.	4	*e.g. arrival management system, automated holding lists, vertical traffic displays*	APS ACS
12	**IDENTIFICATION**			
12.1	**Establishment of Identification**			
12.1.1	Apply the methods of establishing identification.	3	ICAO Doc 4444, SSR *e.g. PSR*	APS ACS
12.1.2	Appreciate the precautions when establishing identification.	3	ICAO Doc 4444, SSR *e.g. PSR*	APS ACS

12.1.3	Apply procedures in the case of misidentification.	3		APS ACS
12.2	**Maintenance of Identification**			
12.2.1	Appreciate the necessity to maintain identification.	3		APS ACS
12.3	**Loss of Identity**			
12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	*e.g. Out of radar coverage, loss of ATS surveillance service, weather clutter, other clutter, garbling, etc.*	APS ACS
12.3.2	Apply methods to re-establish identification.	3		APS ACS
12.3.3	Respond to loss/doubt concerning identification.	3	*e.g. procedural separation*	APS ACS
12.4	**Position Information**			
12.4.1	Appreciate the circumstances when position information should be passed to the aircraft.	3		APS ACS
12.4.2	State the format in which position information can be passed to aircraft.	1	ICAO Doc 4444	APS ACS
12.5	**Transfer of Identity**			
12.5.1	Apply the methods of transfer of identification.	3		APS ACS
12.5.2	Appreciate the precautions when transferring identification.	3		APS ACS

Subject 4 : METEOROLOGY

The general objective is:

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

1 METEOROLOGICAL PHENOMENA				
1.1	**Meteorological Phenomena**			
1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Jetstreams, Clear Air Turbulence (CAT), Turbulence, Microburst, Severe mountain waves, Line squalls *e.g. Volcanic ash, Solar radiation*	ACP ACS
1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	*e.g. Separation, holding, diversions, re-routings, etc*	APP ACP APS ACS
1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	*e.g.Thunderstorm, Turbulence, Icing, Volcanic ash*	APP ACP APS ACS
1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.	APP ACP APS ACS
2 SOURCES OF METEOROLOGICAL DATA				
2.1	**Sources of meteorological information**			
2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *e.g. AIREP/AIREP Special*	APP ACP APS ACS
2.1.2	Relay meteorological information	3	To: aircraft, MET office *e.g. flight information centre, adjacent ATS unit*	APP ACP APS ACS

Subject 5 : NAVIGATION

The general objective is:

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

1 MAPS AND AERONAUTICAL CHARTS				
1.1	**Maps and Charts**			
1.1.1	Use relevant maps and charts.	3		APP ACP APS ACS
2 INSTRUMENTAL NAVIGATION				
2.1	**Navigational Systems**			
2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*e.g. limitations, status of ground based and satelite based systems*	APP ACP APS ACS
2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*e.g. limitations, status, degraded procedures*	APP ACP APS ACS
2.2	**Navigational Assistance**			
2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*e.g. Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time*	APS ACS
2.2.2	Assist aircraft in navigation when required.	3	Aircraft observed to be deviating from its known intended route, on request	APS ACS

Subject 6 : AIRCRAFT

The general objective is:

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

1 AIRCRAFT INSTRUMENTS				
1.1	**Aircraft Instruments**			
1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	*e.g. TCAS, wind shear indicator, weather radar*	ALL
1.1.2	Explain the operation of aircraft radio equipment.	2	*e.g. Radios (number of), emergency radios, SELCAL*	ALL
1.1.3	Explain the operation of transponder equipment.	2	Transponders: equipment Mode A, Mode C, Mode S	ALL
1.1.4	Explain the use and benefits of CPDLC.	2		ALL
2 AIRCRAFT CATEGORIES				
2.1	**Wake Turbulence Categories**			
2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
3 FACTORS AFFECTING AIRCRAFT PERFORMANCE				
3.1	**Climb**			
3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*e.g. speed, mass, air density, wind and temperature*	APP ACP APS ACS
3.2	**Cruise**			
3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
3.3	**Descent**			
3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*e.g. wind, speed, rate of descent, cabin pressurisation*	ACP ACS
3.4	**Economic Factors**			
3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*e.g. Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile, Top of descent*	ACP ACS

3.4.2	Use continuous climb techniques where applicable.	3		ACP ACS
3.4.3	Use direct routing where applicable.	3		ACP ACS
3.5	**Miscellaneous Factors**			
3.5.1	Appreciate the influence of operational requirements.	3	*e.g. Military flying, Calibration flights, Aerial photography*	ACP ACS
4	**AIRCRAFT DATA**			
4.1	**Performance Data**			
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 a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
4.1.2	Identify potential or actual emergency situations.	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

i. recognise the necessity to constantly extend their knowledge;
ii. analyse factors which affect personal and team performance.

1	**PSYCHOLOGICAL FACTORS**			
1.1	**Cognitive**			
1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
1.1.3	Monitor the effect of human information processing factors on decision making.	3	*e.g. workload, stress, interpersonal relations, distraction, confidence*	ALL
2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
2.1	**Fatigue**			
2.1.1	State factors that cause fatigue.	1	Shift work *e.g. night shifts and rosters*	ALL
2.1.2	Describe the onset of fatigue.	2	*e.g. Lack of concentration, Listlessness, Irritability, Frustration*	ALL
2.1.3	Recognise the onset of fatigue in self.	1		ALL
2.1.4	Recognise the onset of fatigue in others.	1		ALL
2.1.5	Consider appropriate action when recognising fatigue.	2		ALL
2.2	**Fitness**			
2.2.1	Recognise signs of lack of personal fitness.	1		ALL
2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
3	**SOCIAL AND ORGANISATIONAL FACTORS**			
3.1	**Team Resource Management (TRM)**			
3.1.1	State the objectives of TRM.	1	*e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL

3.1.2	State the content of the TRM concept.	1	*e.g. team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
3.2	**Teamwork and Team Roles**			
3.2.1	Identify reasons for conflict.	3		ALL
3.2.2	Describe actions to prevent human conflicts.	2	*e.g. TRM team roles*	ALL
3.2.3	Describe strategies to cope with human conflicts.	2	*e.g. in your team, in the simulator*	ALL
3.3	**Responsible behaviour**			
3.3.1	Consider the factors which influence responsible behaviour.	2	*e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
4	**STRESS**			
4.1	**Stress**			
4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
4.2	**Stress Management**			
4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
4.2.2	Obtain assistance in stressful situations.	3	*e.g. The benefits of offering,accepting and asking for help in stressful situations*	ALL
4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
4.2.5	Explain procedures used following an incident/accident.	2	*e.g. CISM, Counselling, Human element*	ALL
5	**HUMAN ERROR**			
5.1	**Human Error**			
5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
5.1.2	Differentiate between the types of error.	2	*e.g. Slips, Lapses, Mistakes*	ALL

5.1.3	Describe error-prone conditions.	2	*e.g. increase in traffic*	ALL
5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL
5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL
5.2	**Violation of rules**			
5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2		ALL
6	**WORKING METHODS**			
6.1	**Efficiency**			
6.1.1	Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.	2	*e.g. Own and others workload, OJT, customer requirements, economy, ecology, safety*	ALL
7	**WORKING KNOWLEDGE**			
7.1	**Controller Knowledge**			
7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	*e.g. Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*	ALL
8	**COLLABORATIVE WORK**			
8.1	**Communication**			
8.1.1	Use communication effectively in ATC.	3		ALL
8.2	**Collaborative work within the same area of responsibility**			
8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*e.g. Electronic, written, verbal and non-verbal communication*	ALL
8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*e.g. Strips legibility and encoding, Radar labels designation, Feedback*	ALL
8.2.3	List possible actions to provide a safe position hand over.	1	*e.g. rigour, preparation, overlap time*	ALL

8.2.4	Explain consequences of a missed position hand over process.	2		ALL
8.3	**Collaborative work between different areas of responsibility**			
8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*e.g. Other sectors constraints, electronic coordination tools*	ALL
8.4	**Controller/Pilot Cooperation**			
8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*e.g. workload, mutual knowledge, controller vs. pilot mental picture*	ALL
9	**WORK ENVIRONMENT**			
9.1	**Ergonomics**			
9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL
10	**ATC SAFETY MANAGEMENT**			
10.1	**Experience feedback**			
10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	*e.g. voluntary reporting*	ALL
10.1.2	Describe how reported occurrences are analysed.	2	*e.g. ESARR2, local procedures*	ALL
10.1.3	Name the means used to disseminate recommendations.	1	*e.g. Safety letters, safety boards web pages*	ALL
10.1.4	Explain the "Just Culture" concept.	2	benefits, prerequisites, constraints *e.g. EAM 2 GUI 6, GAIN Report*	ALL
10.2	**Safety investigation branch**			
10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
10.2.2	Define working methods of Safety Investigation Branch.	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

i. integrate knowledge and understanding of the basic working principles of equipment and systems and
ii. comply with the equipment and system degradation procedures in the provision of ATS.

1 VOICE COMMUNICATIONS				
1.1	**Radio Communications**			
1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures *e.g. Frequency selection, Stand-by equipment*	ALL
1.1.2	Identify indications of operational status of radio equipment.	3	*e.g. Indicator lights, Serviceability displays, Selector/frequency displays*	ALL
1.1.3	Consider radio range.	2	*e.g. Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range*	APP ACP APS ACS
1.2	**Other voice communications**			
1.2.1	Operate land line communications.	3	*e.g. telephone, interphone and intercom equipment*	ALL
2 AUTOMATION IN ATS				
2.1	**Aeronautical Fixed Telecommunication Network (AFTN)**			
2.1.1	Decode AFTN messages.	3	*e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
2.2	**Automatic Data Interchange**			
2.2.1	Use automatic data transfer equipment where available.	3	*e.g Sequencing systems, Automated information and coordination, OLDI*	ALL
3 CONTROLLER WORKING POSITION				
3.1	**General**			
3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	*e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF*	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL
3.2	**Situation displays and Information Systems**			
3.2.1	Use situation displays.	3		ALL

3.2.2	Check availability of information material.	3		ALL
3.2.3	Obtain the information from equipment.	3		APP ACP APS ACS
3.3	**Flight Data Systems**			
3.3.1	Use the flight data information at controller working position.	3		ALL
3.4	**Use of Radars**			
3.4.1	Operate radar equipment.	3		APS ACS
3.4.2	Analyse the information provided by the radar equipment.	4		APS ACS
3.4.3	Assign codes.	4		APS ACS
3.4.4	Appreciate the use of Mode S.	3		APS ACS
3.5	**Advanced systems**			
3.5.1	Use controller pilot datalink communications when available.	3		APS ACS
3.5.2	Use the information provided by advanced systems, when available.	3	*e.g. trajectory-based information, MTCD, MONA, etc.*	APS ACS
4	**FUTURE EQUIPMENT**			
4.1	**New Developments**			
4.1.1	Recognise future developments.	1	New advanced systems	ALL
5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
5.1	**General**			
5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL
5.2	**Communication equipment degradation**			
5.2.1	Identify that communication equipment has degraded.	3	*e.g. Ground-air and land line communications*	APP ACP APS ACS
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and land line communications, Alternative methods of transfering data	APP ACP APS ACS

5.3	**Navigational equipment degradation**			
5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*e.g. VOR, Navigational aids*	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	*e.g. Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*	ALL
5.4	**Surveillance equipment degradation**			
5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, Loss of certain facilities, Total failure	APS ACS
5.4.2	Integrate contingency procedures in the event of surveillance equipment degradation.	4	*e.g. Inform adjacent sectors, Inform aircraft, Apply vertical separation (emergency, increased), Increased radar separation, Reduce the number of aircraft entering area of responsibility, Transfer aircraft to another unit*	APS ACS
5.5	**ATC Processing System degradation**			
5.5.1	Identify a processing system degradation.	3	*e.g. FDPS, RDPS, Software processing of situation display*	APS ACS
5.5.2	Integrate contingency procedures in the event of a processing system degradation.	4		APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1	**PROFESSIONAL ENVIRONMENT**			
1.1	**Contributors to ATS operations**			
1.1.1	Characterise civil and military ATS activities.	2	*Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	*Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices*	ALL
1.2	**Customer Relations**			
1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	*e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*	ALL
1.3	**Environmental Protection**			
1.3.1	Describe processes used to ensure environmental protection.	2	*e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations*	ALL

Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

Learners shall develop professional attitudes to manage traffic in unusual, degraded and emergency situations.

1	**UNUSUAL/DEGRADED/EMERGENCY SITUATIONS**			
1.1	**General**			
1.1.1	List common unusual/degraded/ emergency situations.	1	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion*	ALL
1.1.2	Take into account the procedures for given unusual/degraded/ emergency situations.	2		ALL
1.1.3	Take into account that procedures don't exist for all unusual/ degraded/emergency situations.	2	*e.g. real life examples*	ALL
1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*e.g. Separation, Information, Coordination*	ALL
2	**SKILLS IMPROVEMENT**			
2.1	**Communication Effectiveness**			
2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Read back, Silence instruction	ALL
2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
2.2	**Avoidance of mental overload**			
2.2.1	Describe actions to keep the control of the situation.	2	*e.g. sector splitting, holding, flow management, task delegation*	ALL
2.2.2	Organise priority of actions.	4		ALL
2.2.3	Ensure an effective circulation of information.	4	*e.g. between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL
2.2.4	Consider asking for help.	2		ALL
2.3	**Air/Ground Cooperation**			
2.3.1	Collect appropriate information relevant for the situation.	3		ALL

2.3.2	Assist the pilot.	3	pilot workload *e.g. Instructions, information, support, human factors, etc.*	ALL

3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS

3.1 General

3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	*e.g. EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations* *Ambulance flights, GPWS alerts, airframe failure*	ADV APP ACP APS ACS

3.2 Radio failure

3.2.1	Describe the procedures followed by a pilot when he experiences complete or partial radio failure.	2	ICAO Doc 7030 *e.g. military procedures*	ALL
3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*e.g. Prolonged loss of communication*	ALL

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL

3.4 Strayed or Unidentified Aircraft

3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *e.g. Inside controlled airspace, Outside controlled airspace*	ALL
3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL

3.5 Diversions

3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, Distance, Other navigational assistance *e.g. Nearest most suitable aerodrome*	APP ACP APS ACS

3.6 Transponder failure

3.6.1	Apply procedures in the event of a SSR transponder failure.	3	ICAO Doc 4444, ICAO Doc 7030 *e.g. total/partial failure*	APS ACS

Page intentionally left blank.

Page intentionally left blank.

www.eurocontrol.int