EU ATCO INITIAL TRAINING CONTENT — TRACK CHANGES MATRIX

between Appendix to Annex I to Decision 2015/010/R and the EUROCONTROL Specification for ATCO CCC Initial Training Edition 1.0 of 21.10.2008

FOR INFORMATION PURPOSES ONLY

AMC1 to Appendix 2 of Annex I - PART-ATCO

Basic Training

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.O -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

3.3.3 - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

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Subject 1 : INTRODUCTION TO THE COURSE

The ~~general~~ subject objective is:

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

~~- state the rules and regulations concerning employment and security.~~

TOPIC INTRB 1 COURSE MANAGEMENT

Subtopic INTRB 1.1 Course introduction

BASIC INTRB 1.1.1	Explain the aims and main objectives of the course.	2	

Subtopic INTRB 1.2 Course administration

BASIC INTRB 1.2.1	State course administration.	1	

Subtopic INTRB 1.3 Study material and training documentation

BASIC INTRB 1.3.1	Use appropriate documentation and their sources for the course.	3	*Optional content: training documentation, library, CBT library, web, learning management server*
BASIC INTRB 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: supplementary information, library*

TOPIC INTRB 2 INTRODUCTION TO THE ATC TRAINING COURSE

Subtopic INTRB 2.1 Course content and organisation

BASIC INTRB 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events
BASIC INTRB 2.1.2	State the subjects of the course and their purpose.	1	
BASIC INTRB 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*
BASIC INTRB 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*

Subtopic INTRB 2.2 Training ethos

BASIC INTRB 2.2.1	Recognise the feedback mechanisms available.	1	*Optional content: instructor discussions, training progress, assessment, examinations, results, briefing, debriefing*
BASIC INTRB 2.2.2	Describe the positive effect of working and learning together with ~~fellow~~ course participants.	2	Team work in theoretical and practical training
Subtopic INTRB 2.3 ~~The~~ Assessment process			
BASIC INTRB 2.3.1	Describe the assessment process.	2	
TOPIC INTRB 3 INTRODUCTION TO THE ATCO'S FUTURE			
Subtopic INTRB 3.1 Job prospects			
BASIC INTRB 3.1.1	Recognise an ATCO's working environment.	1	Area control unit, approach control unit, aerodrome control unit
BASIC INTRB 3.1.2	Recognise career developments.	1	*Optional content: OJT instructor, supervisor, operational managerial posts, non-operational posts*
~~TOPIC INTRB 4 CONDITIONS OF SERVICE~~			
~~Subtopic INTRB 4.1 Current Conditions of Employment~~			
BASIC INTRB ~~4.1.1~~	~~Take account of administrative employment rules and regulations that apply to a student.~~	~~2~~	
BASIC INTRB ~~4.1.2~~	~~Take account of administrative employment rules and regulations that apply to an ATCO as an employee.~~	~~2~~	
BASIC INTRB ~~4.1.3~~	~~State the licensing/certification system.~~	~~1~~	
~~Subtopic INTRB 4.2 Negotiations and Policies~~			
BASIC INTRB ~~4.2.1~~	~~Recognise the management/staff negotiation and discussion procedures.~~	~~1~~	
BASIC INTRB ~~4.2.2~~	~~Recognise the roles of trade unions, other ATC associations and professional organisations.~~	~~1~~	
~~TOPIC INTRB 5 SECURITY~~			

Subtopic	INTRB ~~5.1~~ ~~Security~~	
BASIC INTRB ~~5.1.1~~	~~State the rules and regulations concerning the security at a facility and within ATC.~~	~~I~~

Subject 2 : AVIATION LAW

The ~~general~~ subject objective is:

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

TOPIC LAWB 1 INTRODUCTION TO AVIATION LAW

Subtopic LAWB 1.1 Relevance of aviation law ~~National and international organisations~~

BASIC LAWB 1.1.1 ~~1.1.3~~	State the necessity for air law, the sources and development of aviation law.	1	Relevant EU legislation, ICAO Convention *Optional content: ICAO Annex 2, national aviation law*
BASIC LAWB 1.1.2 ~~1.1.1~~	Name the key national and international aviation organisations.	1	*Optional content: ICAO, ECAC, EASA, EUROCONTROL, national authority*
BASIC LAWB 1.1.3 ~~1.1.2~~	Describe the impact these organisations have on ATC and their interaction with each other.	2	~~*Optional content: consistency between ESARRs and ICAO SARPs*~~

TOPIC LAWB 2 INTERNATIONAL ORGANISATIONS

Subtopic LAWB 2.1 ICAO

BASIC LAWB 2.1.1	Explain the purpose and function of ICAO.	2	
BASIC LAWB 2.1.2	Describe the methods by which ICAO notifies and implements legislation.	2	SARPs, PANS, ICAO Annexes, ICAO Documents *Optional content: ~~SARPS, PANS, ICAO Annexes, ICAO Documents,~~ regional offices*

Subtopic LAWB 2.2 European and other agencies

BASIC LAWB 2.2.1	Explain the purpose and functions of EUROCONTROL.	2	Network manager function
BASIC LAWB 2.2.2	Explain the purpose and functions of EASA.	2	
BASIC LAWB 2.2.3 ~~2.2.1~~	State the purpose and function of other international agencies and their relevance to air traffic operations.	1	*Optional content: ECAC, EU, ~~EASA,~~ ITU, ~~EUROCONTROL,~~ ~~SRC/SRU,~~ CANSO*

Subtopic LAWB 2.3 Aviation associations

BASIC LAWB 2.3.1	State the purpose of controller, pilot, airline and airspace user associations and their interaction with ATC.	1	*Optional content: IFATCA, IFALPA, IATA, AEA, IAOPA, IACA, military services, ~~JATMWG~~ ETF, ATCEUC*
TOPIC LAWB 3 NATIONAL ORGANISATIONS			
Subtopic LAWB 3.1 ~~General~~ Purpose and function			
BASIC LAWB 3.1.1	Describe the purpose and function of appropriate national agencies and their relevance to air traffic operations.	2	*Optional content: civil aviation administration agencies, government agencies*
Subtopic LAWB 3.2 National legislative procedures			
BASIC LAWB 3.2.1	Describe the means ~~methods~~ by which legislation is implemented, notified and updated.	2	ICAO Annex 15 *Optional content: ~~ICAO Annex 15,~~ AIS, AIPs, AICs, AIRAC SUP,NOTAMs, integrated aeronautical information package, national legislation, letters of agreement, operations manual*
BASIC LAWB 3.2.2	Recognise the information contained in the different parts of the AIP.	1	
Subtopic LAWB 3.3 ~~National Regulatory Body~~ Competent authority			
BASIC LAWB 3.3.1	Name the ~~body~~ competent authority responsible for licensing and enforcing legislation and operational procedures.	1	
BASIC LAWB 3.3.2	Describe how ~~the regulatory body~~ competent authority carries out its safety regulation responsibilities.	2	
Subtopic LAWB 3.4 National aviation associations			
BASIC LAWB 3.4.1	State the purpose of national controller, pilot, airline and airspace user associations. ~~and their interaction with ATC.~~	1	
TOPIC LAWB 4 ATS SAFETY MANAGEMENT			
Subtopic LAWB 4.1 Safety ~~Management and~~ regulation			
BASIC LAWB 4.1.1 1.3.1	Describe the need for safety regulation.	2	~~ESARR 1~~ Regulation (EU) 216/2008 *Optional content: ~~SRC policy document 3,~~ Commission Implementing Regulation (EU) No 1034/2011, national regulation ~~documention~~*
BASIC LAWB 4.1.2 1.3.3	Describe the general principles of the safety organisation.	2	Safety regulation *Optional content: Regulation (EU) No 1035/2011, ~~ESARR 3~~, national regulation*

BASIC LAWB 4.1.3 1.3.4	Explain the impact of safety regulation on the controller.	2	*Optional content: ~~ESARR 5, ESARR 3, EC Directive on a Community air traffic controller licence, national regulations~~, Regulation (EU) 2015/340 on ATCO Licences*
Subtopic LAWB 4.2 Safety management system			
BASIC LAWB 1.3.2	~~Explain how a safety management system complies with regulatory requirements.~~	2	~~ESARR 3~~
BASIC LAWB 4.2.1 1.3.2	Explain the regulatory requirements of safety management systems in ATM.	2	Regulation (EU) No 1035/2011
BASIC LAWB 4.2.2 1.3.2	Explain the principles of the safety management systems.	2	Regulation (EU) No 1035/2011
BASIC LAWB 4.2.3 1.3.5	Describe the safety assessment methodology.	2	~~ESARR 4~~ Regulation (EU) No 1035/2011, Regulation (EU) No 1034/2011 *Optional content: EATMP Air navigation system safety assessment methodology, national regulations*
TOPIC LAWB 5 RULES AND REGULATIONS			
Subtopic LAWB 5.1 Units of measurement			
BASIC LAWB 5.1.1 4.7.1	Describe the units of measurement used in aviation.	2	~~ICAO Annex 5~~ COUNCIL DIRECTIVE of 20 December 1979 on units of measurement
Subtopic LAWB 5.2 ATCO licensing/certification			
BASIC LAWB 5.2.1 1.2.1	Explain the ATCO licensing/certification process.	2	Regulation (EU) 2015/340 on ATCO Licences, ~~ESARR 5~~, Approved training courses, ATCO licence, ratings and endorsements *Optional content: national processes ~~documents, EC Directive on a Community air traffic controller licence;~~*
BASIC LAWB 5.2.2 1.2.2	Explain the privileges and limitations of controller licences.	2	Regulation (EU) 2015/340 on ATCO Licences *~~Optional content: Qualification, validation, minimum experience, training and medical requirements, competence checks~~*

Subtopic LAWB 5.3 ~~General~~ Overview of ANS and ATS			
BASIC LAWB 5.3.1 4.1.1	Differentiate between the Air Navigation Services.	2	~~ICAO Doc 9161~~ Regulation (EC) No 216/2008, Regulation (EC) No 549/2004
BASIC LAWB 5.3.2 4.1.2	Explain the considerations which determine the need for the ATS.	2	ICAO Annex 11
BASIC LAWB 5.3.3 4.1.3	Differentiate between the ATS.	2	ATCS, ADVS, FIS, ALRS
BASIC LAWB 5.3.4 4.1.4	Explain the objectives of ATS.	2	~~ICAO Annex 11~~ Regulation (EU) No 923/2012
Subtopic LAWB 5.4 Rules of the air			
BASIC LAWB 5.4.1 4.3.1	Explain the Rules of the Air.	2	~~ICAO Annex 2~~ Regulation (EU) No 923/2012
BASIC LAWB 5.4.2 4.3.2	State any notified ~~National~~ differences with ICAO.	1	Regulation (EU) No 923/2012 *Optional content: ~~ICAO Doc 7030,~~ Supplements to ICAO Annex 2 and ICAO Annex 11*
BASIC LAWB 5.4.3 4.3.3	Appreciate the influence of relevant flight rules on ATC.	3	General flight rules, instrument flight rules, visual flight rules
BASIC LAWB 5.4.4 4.3.4	Appreciate the differences between flying in accordance with VFR and IFR, in VMC and IMC.	3	~~ICAO Annex 2~~ Regulation (EU) No 923/2012
Subtopic LAWB 5.5 Airspace and ATS routes			
BASIC LAWB 5.5.1 4.2.1	Explain airspace classification.	2	~~ICAO Classes A-G, ICAO Annex 11~~ Regulation (EU) No 923/2012

BASIC LAWB 5.5.2 4.2.2	Differentiate between the different types of airspace.	2	*Optional content: control zones, control areas, airways, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.*
BASIC LAWB 5.5.3 4.2.3	Differentiate between the different types of ATS routes.	2	Airway, arrival route, departure route, advisory route, controlled route, uncontrolled route, etc.
BASIC LAWB 5.5.4 4.2.4	Decode information from aeronautical charts.	3	*Optional content: control zones, control areas, ATS routes, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.*
Subtopic LAWB 5.6 Flight plan			
BASIC LAWB 5.6.1 4.3.5	Explain the functions of a flight plan.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC LAWB 5.6.2 4.3.6	Explain the different types of flight plans and associated update messages.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC LAWB 5.6.3 4.3.7	Explain the pilot's responsibilities in relation to adherence to flight plan.	2	Inadvertent changes, intended changes, position reporting
BASIC LAWB 5.6.4 8.1.3 ATMB	Describe flight plan processing.	2	*Optional content: AFTN, IFPS*
Subtopic LAWB 5.7 Aerodromes			
BASIC LAWB 5.7.1 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
BASIC LAWB 5.7.2 4.4.2	Explain the numbering system and orientation of runways.	2	~~ICAO Annex 14~~ Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM

BASIC LAWB 5.7.3 4.4.3	Differentiate between different types of aerodromes.	2	Controlled, uncontrolled *Optional content: military, international, regional*
BASIC LAWB 5.7.4 4.4.4	Describe designated positions in the traffic circuit.	2	
BASIC LAWB 5.7.5 4.4.5	List the factors affecting the selection of runway in use.	1	
Subtopic LAWB 5.8 Holding procedures for IFR Flights			
BASIC LAWB 5.8.1 4.6.3	Describe the purpose of holding.	2	Traffic management, weather, pilot request, ICAO Doc 4444, ICAO Doc 8168
BASIC LAWB 5.8.2 4.6.1	Describe types of holding patterns.	2	Published, non-published, ~~Extended~~
BASIC LAWB 5.8.3 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)
BASIC LAWB 5.8.4 4.6.2	Describe the ~~use of~~ factors affecting holding pattern.	2	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, ~~etc.~~
Subtopic LAWB 5.9 Holding procedures for VFR flights			
BASIC LAWB 5.9.1 4.5.1	Describe ~~the purpose of~~ VFR holding.	2	
BASIC LAWB ~~5.9.2~~ 4.5.2	~~Describe the principles of VFR holding.~~	~~2~~	

Subject 3 : AIR TRAFFIC MANAGEMENT

The ~~general~~ subject objective is:

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

TOPIC ATMB 1 AIR TRAFFIC MANAGEMENT

Subtopic ATMB 1.1 Application of units of measurement

BASIC ATMB 1.1.1	Apply the units of measurement appropriate to ATM.	3	

Subtopic ATMB 1.2 Air traffic control (ATC) service

BASIC ATMB 1.2.1	Define ATC service.	1	~~ICAO Annex 11~~ Regulation (EU) No 923/2012
BASIC ATMB 1.2.2	Explain the division of the ATC service.	2	Regulation (EC) No 549/2004, ICAO Annex 11
BASIC ATMB 1.2.3	Explain the responsibility for the provision of the ATC service.	2	ICAO Annex 11
BASIC ATMB 1.2.4	Differentiate between the different methods of providing ATC services.	2	Aerodrome, surveillance, procedural

Subtopic ATMB 1.3 Flight information service (FIS)

BASIC ATMB 1.3.1	Define FIS.	1	~~ICAO Annex 11~~ Regulation (EU) No 923/2012
BASIC ATMB 1.3.2	Describe the scope of the FIS.	2	~~ICAO Annex 11~~ Regulation (EU) No 923/2012
BASIC ATMB 1.3.3	Explain the responsibility for the provision of the FIS.	2	Regulation (EU) No 923/2012, ICAO Doc 4444
BASIC ATMB 1.3.4	State the methods of transmitting information.	1	*Optional content: RTF, data link, ATIS, VOLMET, etc.*

BASIC ATMB 1.3.5	List the content of ATIS and VOLMET.	1	Regulation (EU) No 923/2012, ICAO Annex 3 *Optional content: meteorological data obtained by data link*
BASIC ATMB 1.3.6 1.3.5	Issue information to aircraft.	3	*Optional content: SIGMET, serviceability of navaids, weather, flight safety information, essential traffic, essential local traffic, information related to aerodrome conditions, etc.*
Subtopic ATMB 1.4 Alerting service			
BASIC ATMB 1.4.1	Define ALRS.	1	Regulation (EU) No 923/2012 ~~ICAO Doc 4444~~
BASIC ATMB 1.4.2	Describe the scope of the ALRS.	2	Regulation (EU) No 923/2012, ICAO Annex 11
BASIC ATMB 1.4.3	Explain the responsibility for the provision of the ALRS.	2	ICAO Doc 4444
BASIC ATMB 1.4.4	Differentiate between the phases of emergency.	2	Uncertainty, alert, distress
BASIC ATMB 1.4.5	Describe the organisation of an ALRS.	2	Responsibilities, local organisation
BASIC ATMB 1.4.6	Describe the cooperation between units providing the alerting services and the SAR units.	2	
BASIC ATMB 1.4.7	Differentiate between distress and urgency signals.	2	Mayday, Pan Pan, Pan Pan Medical *Optional content: ~~Mayday, Pan,~~ visual signals, etc.*
Subtopic ATMB 1.5 Air traffic advisory service			
BASIC ATMB 1.5.1 1.7.1	Define Air Traffic Advisory Service.	1	Regulation (EU) No 923/2012, ~~ICAO Annex 11~~
BASIC ATMB 1.5.2 1.7.2	Describe the scope of the Air Traffic Advisory Service.	2	ICAO Doc 4444

BASIC ATMB 1.5.3 1.7.3	Explain the responsibility for the provision of the Air Traffic Advisory Service.	2	ICAO Doc 4444
BASIC ATMB 1.5.4 1.7.4	State to which flights Air Traffic Advisory Service shall be provided.	1	ICAO Doc 4444
Subtopic ATMB 1.6 ATS system capacity and air traffic flow management			
BASIC ATMB 1.6.1 1.5.1	Define ATFM.	1	Regulation (EC) No 549/2004
BASIC ATMB 1.6.2 1.5.2	State the scope of capacity management.	1	Regulation (EU) No 255/2010, ICAO Doc 4444 ~~ICAO Annex 11~~
BASIC ATMB 1.6.3 1.5.3	Describe the scope of ATFCM.	2	Regulation (EU) No 255/2010, ICAO Doc 4444, EUROCONTROL ATFCM Users Manual ~~*Optional content: EUROCONTROL ATFCM Users Manual*~~
BASIC ATMB 1.6.4 1.5.4	Explain the responsibility for the provision of ATFCM.	2	Regulation (EU) No 255/2010, ICAO Doc 4444, EUROCONTROL ATFCM Users Manual ~~*Optional content: EUROCONTROL ATFCM Users Manual*~~
BASIC ATMB 1.6.5 1.5.5	Explain ~~State~~ the methods of providing ATFCM.	1->2	Regulation (EU) No 255/2010, ICAO Doc 4444, EUROCONTROL ATFCM Users Manual ~~*Optional content: EUROCONTROL ATFCM Users Manual*~~
Subtopic ATMB 1.7 Airspace management (ASM)			
BASIC ATMB 1.7.1 1.6.1	Define ASM.	1	Regulation (EC) No 549/2004 *Optional content: Commission Regulation (EC) No 2150/2005, ~~EUROCONTROL ASM HBK- Airspace Management Handbook for the application of FUA~~*
BASIC ATMB 1.7.2 1.6.2	Describe the scope of ASM.	2	Regulation (EC) No 2150/2005 *Optional content: FABs, ~~EUROCONTROL ASM HBK- Airspace Management Handbook for the application of FUA~~ EUROCONTROL Specification for the application of the FUA*

BASIC ATMB 1.7.3 1.6.3	Explain the responsibility for the provision of ASM.	2	Regulation (EC) No 2150/2005 *Optional content: ~~EUROCONTROL ASM HBK- Airspace Management Handbook for the application of FUA~~ EUROCONTROL Specification for the application of the FUA*
BASIC ATMB 1.7.4 1.6.4	Explain ~~State~~ the methods of managing airspace.	1->2	Regulation (EC) No 2150/2005 *Optional content: Flexible use of airspace, airspace design, CDRs, TSAs*

TOPIC ATMB 2 ALTIMETRY AND LEVEL ALLOCATION

Subtopic ATMB 2.1 Altimetry

BASIC ATMB 2.1.1 5.1.1	Appreciate the relationship between height, altitude and flight level.	3	QFE, QNH, standard pressure

Subtopic ATMB 2.2 Transition level

BASIC ATMB 2.2.1 5.2.1	Appreciate the relationship between transition level, transition altitude and transition layer.	3	ICAO Doc 4444, ICAO Doc 8168
BASIC ATMB 2.2.2 5.2.2	Calculate appropriate levels.	3	*Optional content: transition level , transition layer, height, lowest useable flight level, vertical distance to airspace boundaries*

Subtopic ATMB 2.3 Level allocation

BASIC ATMB 2.3.1 5.3.1	Describe the cruising level allocation system.	2	Regulation (EU) No 923/2012, ~~ICAO Annex 2,~~ table~~s~~ of cruising levels
BASIC ATMB 2.3.2 5.3.2	Choose appropriate levels.	3	Flight levels, altitudes, heights

TOPIC ATMB 3 RADIOTELEPHONY (RTF)

Subtopic ATMB 3.1 RTF general operating procedures

BASIC ATMB 3.1.1 2.1.1	Explain the need for approved phraseology.	2	

BASIC ATMB 3.1.2 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
BASIC ATMB 3.1.3 2.1.3	Perform communication effectively.	3	Communication techniques, readback/verification of readback
TOPIC ATMB 4 ATC CLEARANCES AND ATC INSTRUCTIONS			
Subtopic ATMB 4.1 Type and content of ATC clearances			
BASIC ATMB 4.1.1 3.1.1	Define ATC clearance.	1	Regulation (EU) No 923/2012, ~~ICAO Annex 2~~
BASIC ATMB 4.1.2 3.1.2	Describe the contents of an ATC clearance.	2	Regulation (EU) No 923/2012, ICAO Doc 4444~~, ICAO Annex 11~~
BASIC ATMB 4.1.3 3.1.3	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*
Subtopic ATMB 4.2 ATC instructions			
BASIC ATMB 4.2.1 3.2.1	Define ATC Instructions.	1	Regulation (EU) No 923/2012, ~~ICAO Doc 4444~~
BASIC ATMB 4.2.2 3.2.2	Describe the contents of an ATC instructions.	2	ICAO Doc 4444, ICAO Annex 11
BASIC ATMB 4.2.3 3.2.3	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*
TOPIC ATMB 5 COORDINATION			
Subtopic ATMB 5.1 Principles, types and content of coordination			

BASIC ATMB 5.1.1 4.1.1	Explain the principles, types and content of coordination.	2	ICAO Doc 4444, ICAO Annex 11 *Optional content: notification, negotiation, agreement, transfer of flight data and local agreements, etc.*
Subtopic ATMB 5.2 Necessity for coordination			
BASIC ATMB 5.2.1 4.2.1	Appreciate the need for coordination.	3	*Optional content: ICAO Doc 4444, local procedures, letters of agreements*
BASIC ATMB 5.2.2	Differentiate between transfer of control and transfer of communication procedures.	2	
Subtopic ATMB 5.3 Means of coordination			
BASIC ATMB 5.3.1 4.3.1	Describe the means of coordination	2	*Optional content: data link, telephone, intercom, voice, etc.*
BASIC ATMB 5.3.2 4.3.2	Use the available means for coordination.	3	
TOPIC ATMB 6 DATA DISPLAY			
Subtopic ATMB 6.1 Data extraction			
BASIC ATMB 6.1.1 8.1.1	Encode and decode an appropriate selection of standard ICAO abbreviations.	3	*Optional content: ICAO Doc 8585, ICAO Doc 8643, ICAO Doc 7910*
BASIC ATMB 6.1.2 8.1.2	Extract pertinent data from relevant sources to produce a flight progress display.	3	Pilot reports, coordination, data exchange *Optional content: flight plan*
BASIC ATMB ~~8.1.3~~ 8.1.3 5.6.4 LAWB	~~Describe flight plan processing.~~	2	~~*Optional content: AFTN, IFPS*~~
BASIC ATMB 6.1.3 8.1.4	Encode and decode flight plans (including supplementary information).	3	ICAO format, AFTN format

Subtopic	**ATMB 6.2**	**Data management**		
BASIC ATMB 6.2.1 8.2.1	Update the ~~data~~ situation display to accurately reflect the traffic situation.	3	*Optional content: strip marking symbols, strip movement procedures, electronic data, ~~radar~~ label*	

TOPIC ATMB 7 SEPARATIONS

Subtopic	**ATMB 7.1**	**Vertical separation and procedures**		
BASIC ATMB 7.1.1 6.1.1	State the vertical separation standards ~~and procedures~~.	1	ICAO Doc 4444	
BASIC ATMB 7.1.2 6.1.1	Explain the vertical separation procedures.	2	ICAO Doc 4444	
Subtopic	**ATMB 7.2**	**Horizontal separation and procedures**		
BASIC ATMB 7.2.1 6.2.1	State the longitudinal separation standards and procedures based on time and distance.	1	ICAO Doc 4444	
BASIC ATMB 7.2.2 6.2.2	State the lateral separation standards and procedures.	1	ICAO Doc 4444	
Subtopic	**ATMB 7.3**	**Visual separation**		
BASIC ATMB 7.3.1 6.3.1	State the occasions when clearance to fly maintaining own separation while in VMC can be used.	1		
Subtopic	**ATMB 7.4**	**Aerodrome separation and procedures**		
BASIC ATMB 7.4.1 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	
BASIC ATMB 7.4.2 6.4.1	Explain the aerodrome separation procedures.	2	ICAO Doc 4444	

BASIC ATMB 7.4.3	Define essential local traffic.	1	ICAO Doc 4444
Subtopic ATMB 7.5 Separation based on ATS surveillance systems			
BASIC ATMB 7.5.1 6.6.1	Explain the use of ATS surveillance systems in ATS.	2	Separation, identification, monitoring, vectoring, expedition and assistance to traffic *Optional content: ICAO Doc 4444*
BASIC ATMB 7.5.2 6.6.2	Explain the ATS surveillance systems separation standards and procedures.	2	ICAO Doc 4444
Subtopic ATMB 7.6 Wake turbulence separation			
BASIC ATMB 7.6.1 6.5.1	Explain the wake turbulence ~~categories and~~ separations.	2	ICAO Doc 4444
Subtopic ATMB ~~7.7~~ ~~Applied separation~~			
BASIC ATMB 6.7.1 9.2.10	~~Apply separation.~~	3	~~*Optional content: vertical, longitudinal, lateral, aerodrome, based on ATS surveillance systems, distances from airspace boundaries*~~
TOPIC ATMB 8 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS			
Subtopic ATMB 8.1 Airborne collision avoidance systems			
BASIC ATMB 8.1.1	State the European requirement for carriage of airborne collision avoidance system.	1	Regulation (EU) No 1332/2011 *Optional content: Regulation (EU) No 1332/2011*
BASIC ATMB 8.1.2 7.1.1	Explain ~~State~~ the main characteristics of airborne warning systems and their relevance to ATC operations.	1->2	ACAS, TAWS *Optional content: ~~ACAS~~ ~~GPWS~~, TCAS, EGPWS, Wind shear alerts*
BASIC ATMB 8.1.3 7.1.2	Explain ~~State~~ the function of ACAS Traffic Alerts and Resolution Advisories.	1->2	Regulation (EU) No 1332/2011, ICAO Doc 8168

BASIC ATMB 8.1.4 7.1.3	List , ~~in the correct order,~~ the actions of the pilot ~~following the~~ in case of TA and RA. ~~generation of ACAS event.~~	1	Regulation (EU) No 1332/2011, ICAO Doc 8168
BASIC ATMB ~~7.1.4~~ 7.1.4 7.1.2 R	~~Describe the controller responsibility during and following an ACAS RA reported by pilot.~~	2	~~ICAO Doc 4444~~
BASIC ATMB 8.1.5 7.1.5	List the ACAS limitations.	1	ICAO Doc 9863
BASIC ATMB ~~7.1.6~~ 7.1.6 7.1.1 R	~~Differentiate between ACAS advisory thresholds and ATC separation standards.~~	2	~~ICAO Doc 9863~~
Subtopic ATMB 8.2 Ground-based safety nets			
BASIC ATMB 8.2.1 7.2.1	Explain ~~State~~ the main characteristics of ground-based safety nets and their relevance to ATC operations.	1->2	*Optional content: STCA, MSAW, APW, APM*
TOPIC ATMB 9 BASIC PRACTICAL SKILLS			
Subtopic ATMB 9.1 Traffic management process			
BASIC ATMB 9.1.1	Consider human information processing in the provision of ATC.	2	Situational awareness, conflict detection, planning, decision making, prioritisation, execution
BASIC ATMB 9.1.2	Consider the need for verification that actions are carried out.	2	Monitoring
Subtopic ATMB 9.2 Basic practical skills applicable to all ratings			
BASIC ATMB 9.2.1	Verify that settings of the working position are appropriate.	3	
BASIC ATMB 9.2.2	Operate the available working position equipment.	3	

BASIC ATMB 9.2.3	Maintain situational awareness by monitoring traffic.	3	Information gathering, scanning, planning
BASIC ATMB 9.2.4	Appreciate priority of actions.	3	
BASIC ATMB 9.2.5	Execute selected plan.	3	
BASIC ATMB 9.2.6	Apply the prescribed procedures for the area of responsibility.	3	*Optional content: LOPs, transfer of control and communication, level allocation, inbound and outbound procedures*
BASIC ATMB 9.2.7	Appreciate relative velocity between aircraft.	3	
BASIC ATMB 9.2.8	Identify separation problems.	3	
BASIC ATMB 9.2.9	Choose appropriate separation methods.	3	
BASIC ATMB 9.2.10 6.7.1	Apply separation.	3	*Optional content: vertical, longitudinal, lateral, aerodrome, based on ATS surveillance systems, distances from airspace boundaries*
Subtopic ATMB 9.3 Basic practical skills applicable to aerodrome			
BASIC ATMB 9.3.1	Perform the basic functions of aerodrome control.	3	
BASIC ATMB 9.3.2	Perform the control of aerodrome traffic.	3	Single runway operations including VFR and IFR traffic
Subtopic ATMB 9.4 Basic practical skills applicable to surveillance			
BASIC ATMB 9.4.1 12.1.1 R	Explain the methods and procedures of establishing identification.	2	ICAO Doc 4444

BASIC ATMB 9.4.2 12.1.1 R	Apply the procedures ~~methods~~ of establishing identification.	3	Any of the ATS surveillance systems identification methods ~~ICAO Doc 4444,~~ ~~SSR~~ ~~*Optional content: PSR*~~
BASIC ATMB 9.4.3	Estimate heading for a new track and the distance to the next way point.	3	
BASIC ATMB 9.4.4	Apply vectoring techniques.	3	
BASIC ATMB 9.4.5	Conduct level changes.	3	*Optional content: cruising level allocation, requested level change, climb/descent to exit level, descent to an altitude or a height*

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

TOPIC	**METB 1 INTRODUCTION TO METEOROLOGY**			
Subtopic	**METB 1.1 Application of units of measurement**			
BASIC METB 1.1.1	Apply the units of measurement appropriate to meteorology.	3		
Subtopic	**METB 1.2 Aviation and meteorology**			
BASIC METB 1.2.1	Explain the relevance of meteorology in aviation.	2		
BASIC METB 1.2.2	Explain the requirements for the provision of meteorological information available to operators, flight crew members, and to air traffic services.	2	ICAO Annex 3, ICAO Annex 11	
BASIC METB 1.2.3 4.4.1	State the meteorological hazards to aviation.	1	Turbulence, thunderstorms, icing, micro bursts, squall, macro burst, wind shear	
Subtopic	**METB 1.3 Organisation of meteorological service**			
BASIC METB 1.3.1	Name the basic duties, organisation and working methods of meteorological offices.	1	*Optional content: WAFS, WAFC, MWO, VAAC, TCAC, SADIS*	
BASIC METB 1.3.2	State the International and National standards for coordination between ATS and MET services.	1		
TOPIC	**METB 2 ATMOSPHERE**			
Subtopic	**METB 2.1 Composition and structure**			
BASIC METB 2.1.1	State the composition and structure of the atmosphere.	1	Gases, layers	
BASIC METB 2.1.2	Describe the basic characteristics of the atmospheric parameters measured.	2	Temperature, pressure, wind, humidity, density	

BASIC METB 2.1.3	List the tools used for the collection of meteorological data.	1	*Optional content: barometer, thermometer, ceilometer, anemometer, weather balloons, transmissometer, radar, satellites, etc.*
Subtopic METB 2.2 Standard atmosphere			
BASIC METB 2.2.1	Describe the elements of the ISA.	2	Temperature, pressure, density
BASIC METB 2.2.2	State the reasons why the ISA has been defined.	1	
Subtopic METB 2.3 Heat and temperature			
BASIC METB 2.3.1	Define the processes by which heat is transferred and how the atmosphere is heated.	1	Radiation, convection, advection, conduction, water cycle
BASIC METB 2.3.2	Describe how temperature varies.	2	Adiabatic processes, lapse rates, stability, instability
BASIC METB 2.3.3	State the influencing factors on surface temperature.	1	
Subtopic METB 2.4 Water in the atmosphere			
BASIC METB 2.4.1	Differentiate between the different processes related to atmospheric moisture.	2	Condensation, evaporation, sublimation, saturation
BASIC METB 2.4.2	Characterise relative humidity, dew point and latent heat.	2	
Subtopic METB 2.5 Air pressure			
BASIC METB 2.5.1	Describe the relationship between pressure, temperature, density and height.	2	
BASIC METB 2.5.2	Explain the relationship between pressure settings.	2	QFE, QNH, standard pressure

BASIC METB 2.5.3	Explain the effect of air pressure and temperature on altimeter readings and the true altitude of aircraft.	2	
BASIC METB 2.5.4	State how atmospheric pressure is measured.	1	
TOPIC METB 3 ATMOSPHERIC CIRCULATION			
Subtopic METB 3.1 General air circulation			
BASIC METB 3.1.1	State the major atmospheric circulation features on the Earth.	1	*Optional content: Hadley cells, high and low belts, polar fronts, westerly winds, upper level jet streams*
Subtopic METB 3.2 Air masses and frontal systems			
BASIC METB 3.2.1	Describe the origin and movement of typical air masses and their general effect on European weather.	2	Polar, arctic, tropical, equatorial (maritime and continental)
BASIC METB 3.2.2	Describe the main isobaric features.	2	Cyclones, anticyclones, ridge, trough
BASIC METB 3.2.3	Describe the difference between various fronts and the associated weather.	2	Warm front, cold front, occluded front
Subtopic METB 3.3 Mesoscale systems			
BASIC METB 3.3.1	Describe the main phenomena caused by mesoscale systems.	2	Mountain waves, Föhn, slope and valley winds, thunderstorm, squall line *Optional content: land/sea breezes, tornadoes, land spouts, waterspouts*
BASIC METB 3.3.2	Explain ~~State~~ the relevance of mesoscale systems to aviation.	1->2	
Subtopic METB 3.4 Wind			
BASIC METB 3.4.1	Explain the significance of wind phenomena and types.	2	*Optional content: veering, backing, gusting, jet streams, land/sea breezes, Föhn, surface, upper*
BASIC METB 3.4.2	State how wind is measured.	1	

BASIC METB 3.4.3	Explain effect of forces which influence wind.	2	

TOPIC METB 4 METEOROLOGICAL PHENOMENA

Subtopic METB 4.1 Clouds

BASIC METB 4.1.1	Explain the different conditions for the formation of clouds.	2	
BASIC METB 4.1.2	Recognise different cloud types.	1	
BASIC METB 4.1.3	State the cloud types main characteristics.	1	
BASIC METB 4.1.4	State how the cloud base and the amount of cloud are measured and/or observed.	1	
BASIC METB 4.1.5	Define cloud base and ceiling.	1	
BASIC METB 4.1.6	Differentiate between cloud base and ceiling.	2	

Subtopic METB 4.2 Types of precipitation

BASIC METB 4.2.1	Explain the significance of precipitation in aviation.	2	
BASIC METB 4.2.2	Describe types of precipitation and their corresponding cloud families.	2	*Optional content: rain, snow, snow grains, hail, ice pellets, ice crystals, drizzle*

Subtopic METB 4.3 Visibility

BASIC METB 4.3.1	Explain the causes of atmospheric obscurity.	2	
BASIC METB 4.3.2	Differentiate between different types of visibility.	2	Horizontal visibility, slant visibility, prevailing visibility, RVR

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

Subject 5 : NAVIGATION

The ~~general~~ subject objective is:

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

TOPIC NAVB 1 INTRODUCTION TO NAVIGATION

Subtopic NAVB 1.1 Application of units of measurement

BASIC NAVB 1.1.1	Apply the units of measurement appropriate to navigation.	3	

Subtopic NAVB 1.2 Purpose and use of navigation

BASIC NAVB 1.2.1	Explain the need for navigation in aviation.	2	
BASIC NAVB 1.2.2	Characterise navigation methods.	2	*Optional content: historical overview, celestial, on-board, radio, satellites*

TOPIC NAVB 2 THE EARTH

Subtopic NAVB 2.1 Place and movement of the Earth

BASIC NAVB 2.1.1	Explain the Earth's properties and their effects.	2	*Optional content: form, size, rotation, revolution in space, seasons, day, night, twilight, units of time, time zones, UTC*

Subtopic NAVB 2.2 System of coordinates, direction and distance

BASIC NAVB 2.2.1	Characterise the general principles of a grid system.	2	*Optional content: degrees, minutes, seconds, WGS-84, latitude/longitude*
BASIC NAVB 2.2.2	Explain direction and distance on a globe.	2	*Optional content: great circle, small circle, rhumb line, cardinal points, inter-cardinal points*
BASIC NAVB 2.2.3	Estimate position on the Earth's surface.	3	*Optional content: latitude/longitude*
BASIC NAVB 2.2.4	Estimate distance and direction between two points.	3	

Subtopic NAVB 2.3 Magnetism

BASIC NAVB 2.3.1	Explain the general principles of the Earth's magnetism.	2	True north, magnetic north, variation, deviation, inclination
BASIC NAVB 2.3.2	Calculate conversions between the three north designations.	3	True north, magnetic north, compass north

TOPIC NAVB 3 MAPS AND AERONAUTICAL CHARTS

Subtopic NAVB 3.1 Map making and projections

BASIC NAVB 3.1.1	State how the Earth is projected to create a map.	1	Types of projection
BASIC NAVB 3.1.2	Describe the properties of a map.	2	Projection, scale
BASIC NAVB 3.1.3 3.1.2	Describe the properties of an ideal map.	2	*Optional content: conformality, constant scale, true azimuth, rhumb lines and great circles*
BASIC NAVB 3.1.4 3.1.3	State ~~Explain~~ the properties and use of different projections.	2->1	*Optional content: Lambert, Mercator, stereographic*

Subtopic NAVB 3.2 Maps and charts used in aviation

BASIC NAVB 3.2.1	Differentiate between the various maps and charts.	2	
BASIC NAVB 3.2.2	State the specific use of various maps and charts.	1	
BASIC NAVB 3.2.3	Decode symbols and information displayed on maps and charts.	3	*Optional content: topographical features, NAV aids, fixes etc.*

TOPIC NAVB 4 NAVIGATIONAL BASICS

Subtopic NAVB 4.1 Influence of wind

BASIC NAVB 4.1.1	Appreciate the influence of wind on the flight path.	3	Heading, track, drift, wind vector

Subtopic NAVB 4.2 Speed			
BASIC NAVB 4.2.1	Explain the relationship between various speeds used in aviation.	2	True air speed, ground speed, indicated air speed (including Mach number)
BASIC NAVB 4.2.2	Appreciate the use of various speeds in ATC.	3	
Subtopic NAVB 4.3 Visual navigation			
BASIC NAVB 4.3.1	Differentiate ~~Explain~~ between the ~~different~~ methods of visual navigation.	2	Map reading, visual reference *Optional content: dead-reckoning*
Subtopic NAVB 4.4 Navigational aspects of flight planning			
BASIC NAVB 4.4.1	Describe the navigational aspects affecting flight planning.	2	*Optional content: fuel/time calculations, min altitudes, alternative routes*
TOPIC NAVB 5 INSTRUMENT~~AL~~ NAVIGATION			
Subtopic NAVB 5.1 Ground-based systems			
BASIC NAVB 5.1.1	Explain the basic working principles of ground-based systems.	2	VDF, NDB, VOR, DME, ILS *Optional content: TACAN, MLS*
BASIC NAVB 5.1.2	State the use of ground-based systems.	1	VDF, NDB, VOR, DME, ILS *Optional content: TACAN, MLS*
BASIC NAVB 5.1.3	Characterise the main radio navigation techniques based on ground-based systems.	2	*Optional content: homing, inbound/outbound tracking, instrument approach procedures, holding, drift assessment*
BASIC NAVB 5.1.4	Explain the effects of precision and limitations of ground-based systems on the flight.	2	VDF, NDB, VOR, DME, ILS *Optional content: TACAN, MLS*
Subtopic NAVB 5.2 Inertial navigation ~~On-board~~ systems			
BASIC NAVB 5.2.1	Explain the basic working principles, precision and limitations of on-boards systems.	2	*Optional content: INS/IRS*
BASIC NAVB 5.2.2	State the use of on-board systems.	1	

BASIC NAVB ~~5.2.3~~ 5.2.1	~~Explain the effects of precision and limitations of on-board systems.~~	~~2~~	

Subtopic	**NAVB 5.3 Satellite-based systems**		
BASIC NAVB 5.3.1	Explain the basic working principles of positioning systems.	2	*Optional content: GPS, GLONASS, Galileo*
BASIC NAVB 5.3.2	State the basic principles of GNSS concept.	1	Basic, ABAS, SBAS, GBAS
BASIC NAVB 5.3.3	Explain ~~State~~ the effects of precision and limitations of satellite-based systems.	1->2	*Optional content: RAIM, GPS Notams*
Subtopic	**NAVB 5.4 Instrument approach procedures**		
BASIC NAVB 5.4.1	Recognise various types of instrument approach using aeronautical charts.	1	
BASIC NAVB 5.4.2	Differentiate between precision approach and non-precision approach procedures.	2	
BASIC NAVB 5.4.3	Recognise the different minima used during an instrument approach.	1	
BASIC NAVB 5.4.4	Define the terms obstacle clearance altitude/height and minimum descent altitude/height.	1	
BASIC NAVB 5.4.5	List the instrument approach fixes.	1	IAF, IF, FAF, FAP, MAPt
TOPIC	**NAVB 6 PERFORMANCE BASED ~~AREA~~ NAVIGATION**		
Subtopic	**NAVB 6.1 Principles and benefits of area navigation**		
BASIC NAVB 6.1.1	Explain the basic principles of area navigation.	2	*Optional content: ICAO Doc 9613*

BASIC NAVB 6.1.2	State the benefits of area navigation.	1	*Optional content: ICAO Doc 9613*
BASIC NAVB 6.1.3	State the effects of navigational performance accuracy of RNAV systems on the flight.	1	TSE, PDE, NSE, FTE *Optional content: ICAO Doc 9613*
BASIC NAVB 6.1.4 6.2.2	Characterise the main aircraft and avionics functionalities ~~navigational techniques based on~~ used in area navigation.	2	*Optional content: way points transitions (FRT) and path terminators (including RF), fly over and fly by a way point, parallel offset*
BASIC NAVB 6.1.5 6.2.3	Characterise the navigational functions of FMS.	2	*Optional content: VNAV, LNAV*
Subtopic NAVB 6.2 Introduction to PBN			
BASIC NAVB 6.2.1	State the general concept of PBN.	2	*Optional content: ICAO Doc 9613*
BASIC NAVB 6.2.2	Differentiate between RNAV and RNP.	2	On board performance monitoring and alerting
BASIC NAVB 6.2.3	State the navigation infrastructure that may be used in PBN.	1	VOR, DME, GNSS *Optional content: functionality IRS/INS*
BASIC NAVB 6.2.4	State the benefits of PBN concept.	1	*Optional content: global interoperability, limited number of navigation specifications*
BASIC NAVB ~~6.2.4~~ 6.2.4	~~List the types of RNP.~~	1	
Subtopic NAVB 6.3 PBN applications ~~Types and techniques~~			
BASIC NAVB 6.3.1 6.2.1	List the navigation applications in use in Europe. ~~types of RNAV~~.	1	En-route, terminal/approach *Optional content: RNAV-5 (B-RNAV), RNAV-1 (≈ P-RNAV), ~~RNP-RNAV~~*
TOPIC NAVB 7 DEVELOPMENTS IN NAVIGATION			
Subtopic NAVB 7.1 Future developments			

BASIC NAVB 7.1.1 6.3.1	State ~~Be aware of new~~ future developments in navigation.	0->1	~~PBN, etc.~~

Subject 6 : AIRCRAFT

The ~~general~~ subject objective is:

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

TOPIC ACFTB 1 INTRODUCTION TO AIRCRAFT

Subtopic ACFTB 1.1 Application of units of measurement

BASIC ACFTB 1.1.1	Apply the units of measurement appropriate to aircraft and principles of flight.	3	

Subtopic ACFTB 1.2 Aviation and aircraft

BASIC ACFTB 1.2.1	Explain the relevance of theory of flight and aircraft characteristics in ATS operations.	2	

TOPIC ACFTB 2 PRINCIPLES OF FLIGHT

Subtopic ACFTB 2.1 Forces acting on aircraft

BASIC ACFTB 2.1.1	Explain the forces acting on an aircraft in flight and their interaction.	2	Lift, thrust, drag, weight during level flight *Optional content: during climb, descent, turn*
BASIC ACFTB 2.1.2	Explain causes and effects of wake turbulence.	2	Induced drag

Subtopic ACFTB 2.2 Structural components and control of an aircraft

BASIC ACFTB 2.2.1	Describe ~~List~~ the main structural components of an aircraft.	1->2	Rotary and fixed wing, tail plane, fuselage, flap, aileron, elevator, rudder, landing gear
BASIC ACFTB 2.2.2	Explain how the pilot controls the movements of an aircraft.	2	*Optional content: rudder, aileron, elevator, throttle, rotary wing controls*
BASIC ACFTB 2.2.3	Explain the factors affecting aircraft stability.	2	

Subtopic ACFTB 2.3 Flight envelope

BASIC ACFTB 2.3.1	Characterise the critical factors which affect aircraft performance.	2	Maximum speeds, minimum and stall speeds, ceiling, critical angle of attack, maximum ROC

TOPIC ACFTB 3 AIRCRAFT CATEGORIES

Subtopic ACFTB 3.1 Aircraft categories

BASIC ACFTB 3.1.1 5.1.1	List the different categories of aircraft.	1	*Optional content: fixed wing, rotary wing, balloon, glider*
Subtopic ACFTB 3.2 Wake turbulence categories			
BASIC ACFTB 3.2.1 5.2.1	List the wake turbulence categories.	1	ICAO wake turbulence categories
Subtopic ACFTB 3.3 ICAO approach categories			
BASIC ACFTB 3.3.1 5.3.1	List the ICAO approach categories.	1	ICAO Doc 8168
Subtopic ACFTB 3.4 Environmental categories			
BASIC ACFTB 3.4.1	List ICAO noise classification.	1	ICAO Annex 16
TOPIC ACFTB 4 AIRCRAFT DATA			
Subtopic ACFTB 4.1 Recognition			
BASIC ACFTB 4.1.1 7.1.1	Recognise the most commonly used aircraft.	1	
Subtopic ACFTB 4.2 Performance data			
BASIC ACFTB 4.2.1 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
BASIC ACFTB 4.2.2 7.2.2	State the standard average performance data of the most commonly used aircraft.	1	Rate of climb/descent, cruising speed, ceiling
TOPIC ACFTB 5 AIRCRAFT ENGINES			
Subtopic ACFTB 5.1 Piston engines			
BASIC ACFTB 5.1.1 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

Subtopic	**ACFTB 5.2**	**Jet engines**		
BASIC ACFTB 5.2.1 3.2.1	Explain the operating principles, advantages and disadvantages of the jet engine.		2	
BASIC ACFTB 5.2.2 3.2.2	List the different types of jet engines.		1	
Subtopic	**ACFTB 5.3**	**Turboprop engines**		
BASIC ACFTB 5.3.1 3.3.1	Explain the operating principles, advantages and disadvantages of the turboprop engine and propeller.		2	
Subtopic	**ACFTB 5.4**	**Aviation fuels**		
BASIC ACFTB 5.4.1	List the most common aviation fuels.		1	
TOPIC	**ACFTB 6**	**AIRCRAFT SYSTEMS AND INSTRUMENTS**		
Subtopic	**ACFTB 6.1**	**Flight instruments**		
BASIC ACFTB 6.1.1 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
BASIC ACFTB 6.1.2 4.1.2	Explain the impact of errors and abnormal indications of flight instruments on aircraft operations.		2	*Optional content: Pitot-static failures, unreliable gyro source*
Subtopic	**ACFTB 6.2**	**Navigational instruments**		
BASIC ACFTB 6.2.1 4.2.1	Describe the basic on-board operating principles and interpretation of the information displayed by navigational instruments/systems.		2	*Optional content: ADF, VOR (TACAN), DME, ILS, MLS, inertial reference system, satellite-based systems*
Subtopic	**ACFTB 6.3**	**Engine instruments**		
BASIC ACFTB 6.3.1 4.3.1	List the vital engine monitoring parameters and their associated instruments.		1	*Optional content: oil pressure and temperature, engine temperature, rpm, fuel state and flow*
Subtopic	**ACFTB 6.4**	**Aircraft systems**		

BASIC ACFTB 6.4.1 4.4.1	Explain the use of the most common aircraft systems.	2	SSR transponder, GPWS, EFIS, flight director, autopilot, FMS, ice protection systems *Optional content: ~~SSR transponder~~, ADS capability, head up display, wind shear indicator, weather radar, ~~GPWS, EFIS, Flight director, autopilot, FMS~~, hydraulic system, electrical system, environmental system*
BASIC ACFTB 6.4.2 4.4.2	Explain the impact of degradation/failure of the most common aircraft systems on aircraft operations.	2	Engine failure *Optional content: hydraulic failure, electrical failure, environmental system failure, degradation of aircraft position source data*

TOPIC ACFTB 7 FACTORS AFFECTING AIRCRAFT PERFORMANCE

Subtopic ACFTB 7.1 Take-off factors

BASIC ACFTB 7.1.1 6.1.1	Explain the factors affecting aircraft during take-off.	2	Runway conditions, runway slope, wind, temperature, aerodrome elevation, aircraft mass

Subtopic ACFTB 7.2 Climb factors

BASIC ACFTB 7.2.1 6.2.1	Explain the factors affecting aircraft during climb.	2	Speed, mass, wind, temperature, cabin pressurisation, air density

Subtopic ACFTB 7.3 Cruise factors

BASIC ACFTB 7.3.1 6.3.1	Explain the factors affecting aircraft during cruise.	2	Level, cruising speed, wind, mass, cabin pressurisation

Subtopic ACFTB 7.4 Descent and initial approach factors

BASIC ACFTB 7.4.1 6.4.1	Explain the factors affecting aircraft during descent.	2	Wind, speed, rate of descent, aircraft configuration, cabin pressurisation
BASIC ACFTB 7.4.2	Explain the factors affecting an aircraft in a holding pattern.	2	Speed, level, turbulence, icing

Subtopic ACFTB 7.5 Final approach and landing factors

BASIC ACFTB 7.5.1 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,

Subtopic	**ACFTB 7.6**	**Economic factors**		
BASIC ACFTB 7.6.1 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
Subtopic	**ACFTB 7.7**	**~~Ecological~~ Environmental factors**		
BASIC ACFTB 7.7.1 6.7.1	Explain performance restrictions due to ~~ecological~~ environmental constraints.		2	*Optional content: continuous descent operation (CDO), fuel dumping, noise abatement procedures, minimum flight levels*
Subtopic	**ACFTB ~~7.8~~**	**~~Miscellaneous factors~~**		
BASIC ACFTB ~~6.8.1~~ 6.8.1 2.1.1 PENB	~~Explain special operational requirements which affect aircraft performance.~~		2	~~*Optional content: Military flying, calibration flights, aerial photography*~~

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

Learners shall characterise factors which affect personal and team performance.

TOPIC HUMB 1 INTRODUCTION TO HUMAN FACTORS

Subtopic HUMB 1.1 ~~Introduction~~ Learning techniques			
BASIC HUMB ~~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~~
BASIC HUMB 1.1.1 1.1.3	Appreciate appropriate learning techniques.	3	How the influence of interactive techniques can lead to improved learning
BASIC HUMB ~~1.1.2~~	~~List the reference documents used.~~	1	~~*Optional content: 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)*~~
Subtopic HUMB 1.2 ~~Why~~ Relevance of human factors for ATC			
BASIC HUMB 1.2.1	Explain the relevance and importance of ~~why~~ human factors. ~~is a subject in this course.~~	2	Historical background, safety impact on ATM, licensing requirements, incidents
Subtopic HUMB 1.3 Human factors and ATC			
BASIC HUMB 1.3.1 1.2.2	Define human factors.	1	*Optional content: ICAO Human Factors Training Manual*
BASIC HUMB 1.3.2 1.2.7	Explain the relationship between human factors and the aviation environment. ~~use and benefits of the SHELL model.~~	2	*Optional content: ICAO Human Factors Training Manual, visits to the simulator and operational roo, SHELL model, PEAR model*
BASIC HUMB 1.3.3 1.2.3	Explain the concept of systems.	2	People, procedures, equipment
BASIC HUMB 1.3.4 1.2.4	Explain ATM in systems terms.	2	

BASIC HUMB 1.3.5 1.2.5	Explain ~~Recognise~~ the consequences of a systems failure in ATS.	1->2	
BASIC HUMB 1.3.7 1.2.8	Explain the information requirement of ATC.	2	Relevant, timely, accurate
BASIC HUMB 1.3.8 1.2.9	Describe the role of the human in the evolution of ATC.	2	*Optional content: history of ATC, airspace, communications, radar, advanced ATS systems, the future of ATC*
BASIC HUMB 1.3.9 1.2.10	Explain ~~Recognise~~ the importance of situational awareness for decision making.	1->2	
TOPIC HUMB 2 HUMAN PERFORMANCE			
Subtopic HUMB 2.1 Individual behaviour			
BASIC HUMB 2.1.1	Explain the differences and commonalities that exist between people.	2	*Optional content: attitudes, cultural, language*
BASIC HUMB 2.1.2	Explain the dangers of boredom.	2	
BASIC HUMB 2.1.3	Explain the dangers of overconfidence and complacency.	2	
BASIC HUMB 2.1.4	Explain the dangers of fatigue.	2	Sleep disturbance, heavy workload
Subtopic HUMB 2.2 Safety culture and professional conduct			
BASIC HUMB 2.2.1	Characterise the role of air traffic controller for positive safety culture.	2	
BASIC HUMB 2.2.2 2.2.1	Describe the need for professional standards in ATC.	2	*Optional content: adherence to rules and regulations etc.*

BASIC HUMB 2.2.3 2.2.2	Appreciate ~~Describe~~ the needed basic professional attitudes appropriate ~~to respond~~ to a high level of safety.	2->3	*Optional content: punctuality, rigour, adherence to rules, teamwork attitude*
BASIC HUMB 2.2.4 2.2.3	Describe ~~Recognise~~ the impact of responsibility on controllers action(s).	1->2	Responsibility as a guidance for appropriate action
BASIC HUMB 2.2.5 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.)
Subtopic HUMB 2.3 Health and well-being			
BASIC HUMB 2.3.1	Consider the effect of health on performance.	2	*Optional content: fitness, diet, drugs, alcohol*
Subtopic HUMB 2.4 Teamwork			
BASIC HUMB 2.4.1	Describe the differences between social human relations and professional interactions.	2	
BASIC HUMB 2.4.2	Describe the different types and characters in a team.	2	*Optional content: leader, follower*
BASIC HUMB 2.4.3	Appreciate ~~Describe~~ the principles of teamwork.	2->3	*Optional content: team membership, group dynamics, advantages/disadvantages of teamwork, conflicts and their solutions*
BASIC HUMB 2.4.4	Describe leader style and group interaction.	2	
Subtopic HUMB 2.5 Basic needs of people at work			
BASIC HUMB 2.5.1	List basic needs of people at work.	1	*Optional content: balance between~~:~~ individual ability and workload, working time and rest periods; adequate physical working conditions, positive working environment*
BASIC HUMB 2.5.2	Characterise the factors of work satisfaction.	2	*Optional content: money, achievement, recognition, advancement, challenge*
Subtopic HUMB 2.6 Stress			

BASIC HUMB 2.6.1	Define stress.	1	Stress definition *Optional content: EATCHIP Human Factors Module - Stress*
BASIC HUMB 2.6.2	Describe ~~Recognise~~ stress symptoms and sources.	1->2	Behavioural changes, lifestyle changes, physical symptoms, crisis events, main causes of stress *Optional content: EATCHIP Human Factors Module - Stress*
BASIC HUMB 2.6.3	Describe the stages of stress.	2	Stress performance curve *Optional content: EATCHIP Human Factors Module - Stress*
BASIC HUMB 2.6.4	Appreciate ~~Describe~~ techniques for stress management.	2->3	*Optional content: relaxation techniques, diet and lifestyle, exercise, EATCHIP Human Factors Module - Stress*

TOPIC HUMB 3 HUMAN ERROR

Subtopic HUMB 3.1 ~~Introduction~~ Dangers of error

BASIC HUMB 3.1.1	Recognise the dangers of error in ATC.	1	*Optional content: Air Traffic Control-Human Performance Factors, (Anne Isaac 1999), Human Factors in Air Traffic Control, (V. David Hopkin 1995)*

Subtopic HUMB 3.2 Definition of human error

BASIC HUMB 3.2.1	Define human error.	1	
BASIC HUMB 3.2.2	Describe the factors which contribute ~~help~~ to cause error.	2	Fatigue, lack of skill, misunderstanding, multitasking, lack of information, distraction, lack of work satisfaction ~~*Optional content: fatigue, lack of skill, misunderstanding, lack of information, distraction, lack of work satisfaction*~~

Subtopic HUMB 3.3 Classification of human error

BASIC HUMB 3.3.1	State the types of errors.	1	*Optional content: slips, lapses, mistakes*
BASIC HUMB 3.3.2	Define violations.	1	
BASIC HUMB 3.3.3	Differentiate between errors and violations of rules.	2	

BASIC HUMB 3.3.4	Describe the three levels of performance according to the Rasmussen model.	2	Skill based, knowledge based, rule based
Subtopic HUMB 3.4 ~~The Reason model~~ Risk analysis and risk management			
BASIC HUMB 3.4.1	Describe ~~the Reason model~~ risk analysis and risk management of human systems and error.	2	Active failures and latent conditions *Optional content: Reason model, HFACS (Human Factors Analysis & Classification System) model, Heinrich Theory*
BASIC HUMB 3.4.2	Apply ~~the Reason principles~~ one risk analysis model on error during a case study.	3	~~*Optional content: Herald of Free Enterprise accident*~~
TOPIC HUMB 4 COMMUNICATION			
Subtopic HUMB 4.1 ~~Introduction~~ Importance of good communications in ATC			
BASIC HUMB 4.1.1	Appreciate ~~Demonstrate~~ the importance of good communications in ATC.	2->3	
Subtopic HUMB 4.2 ~~The~~ Communication process			
BASIC HUMB 4.2.1	Define communication.	1	
BASIC HUMB 4.2.2	Define the communication process.	1	*Optional content: sender, encoder, transmitter, signal, interference, reception, decoder, receiver, feedback*
Subtopic HUMB 4.3 Communication modes			
BASIC HUMB 4.3.1	Describe the factors which affect verbal communication.	2	*Optional content: word choice, intonation, speed, tone, distortion, load, expectation, noise, interruption, language knowledge (i.e. accent, dialect, vocabulary)*
BASIC HUMB 4.3.2	Describe the factors which affect non-verbal communication.	2	*Optional content: touch, choice, expectation, noise, interruption*
BASIC HUMB 4.3.3	Apply good communication practices.	3	Speaking and listening
TOPIC HUMB 5 THE WORK ENVIRONMENT			
Subtopic HUMB 5.1 ~~Introduction~~ Ergonomics and the need for good design			

BASIC HUMB 5.1.1	Define ergonomics.	1	
BASIC HUMB 5.1.2	Recognise ~~Be aware of~~ the need for good building design.	0->1	*Optional content: light, insulation, decor, space, facilities*
BASIC HUMB 5.1.3	Explain the need for good work position design.	2	*Optional content: anthropometry (seating, work station design, input device, etc.)*
Subtopic HUMB 5.2 Equipment and tools			
BASIC HUMB 5.2.1	Characterise the equipment and tools that will be used in simulation in accordance with the SHELL model.	2	The physical environment, visual displays, suites, input devices, communications equipment, console profile and layout
Subtopic HUMB 5.3 Automation			
BASIC HUMB 5.3.1	Explain the reasons for automation.	2	
BASIC HUMB 5.3.2	Describe the advantages and constraints of automation.	2	

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject objective is:

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

TOPIC EQPSB 1 ~~GENERAL~~ ATC EQUIPMENT

Subtopic EQPSB 1.1 Main types of ATC equipment

BASIC EQPSB 1.1.1	Explain the relevance of ATC equipment. ~~Characterise the main items of ATC equipment.~~	2	CWP, Communication equipment, ATS surveillance systems ~~*Optional content: Communication equipment, VDF/UDF, radars*~~

TOPIC EQPSB 2 RADIO

Subtopic EQPSB 2.1 Radio theory

BASIC EQPSB 2.1.1	State principles of radio waves.	1	
BASIC EQPSB 2.1.2	Describe ~~Recognise~~ the characteristics of radio waves.	1->2	Propagation, limitations
BASIC EQPSB 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
BASIC EQPSB 2.1.4	State the different uses of radio wave spectrum.	1	

Subtopic EQPSB 2.2 Direction finding

BASIC EQPSB 2.2.1 2.3.1	State the principles and use of VDF/UDF.	1	VDF/UDF, QDM, QDR, QTF
BASIC EQPSB 2.2.2 2.3.2	State the precision of VDF/UDF used in the State system.	1	

TOPIC EQPSB 3 ~~OTHER SYSTEMS AND~~ COMMUNICATION~~S~~ EQUIPMENT

Subtopic EQPSB 3.1 Radio communications

BASIC EQPSB 3.1.1 2.1.1	State the use of the radio in ATC.	1	
BASIC EQPSB 3.1.2 2.2.2	Describe the working principles of a transmitting and receiving system.	2	
BASIC EQPSB 3.1.3 2.2.3	Explain the effect of antenna shadowing on RTF communications.	2	
Subtopic EQPSB 3.2 Voice ~~ATC~~ communication~~s~~ between ATS units/positions			
BASIC EQPSB 3.2.1 3.1.1	Describe the use of other voice communications in ATC.	2	*Optional content: telephone, interphone, intercom*
Subtopic EQPSB 3.3 Data link ~~Air ground~~ communications			
BASIC EQPSB 3.3.1	Explain ~~State~~ the use and benefits of controller pilot datalink communications (CPDLC).	1->2	
Subtopic EQPSB 3.4 Airline communications			
BASIC EQPSB 3.4.1 3.2.1	State the use of SELCAL.	1	
BASIC EQPSB 3.4.2	Explain the use and benefits of Aircraft Communications Addressing and Reporting System (ACARS).	2	
TOPIC EQPSB 4 INTRODUCTION TO SURVEILLANCE			
Subtopic EQPSB 4.1 Surveillance concept in ATS			
BASIC EQPSB 4.1.1	Describe the concept of surveillance for the provision of ATS.	2	
TOPIC EQPSB 5 RADAR			
Subtopic EQPSB 5.1 ~~General~~ Principles of radar			

BASIC EQPSB 5.1.1 4.1.1	State the principles of radar.	1	
BASIC EQPSB 5.1.2 4.1.2	Recognise the characteristics of radar wave lengths.	1	
BASIC EQPSB 5.1.3 4.1.3	Recognise the use, characteristics and limitations of different radar types.	1	*Optional content: frequency bands, long and short-range radar, weather radar, high-resolution radar*
Subtopic EQPSB 5.2 Primary radar			
BASIC EQPSB 5.2.1 4.2.1	Explain the working principles of PSR.	2	
Subtopic EQPSB 5.3 Secondary radar			
BASIC EQPSB 5.3.1 4.3.1	Explain the working principles of SSR.	2	Mode A, Mode C
BASIC EQPSB 5.3.2 4.3.2	Explain SSR code management	2	Discrete, non-discrete codes, special codes
BASIC EQPSB 5.3.3 4.3.3	Explain the effect of antenna shadowing on SSR operation.	2	
Subtopic EQPSB 5.4 Use of radars			
BASIC EQPSB 5.4.1 4.4.1	Explain the use of PSR/SSR in ATC.	2	Area, approach, aerodrome, surface movement radar, DFTI
BASIC EQPSB ~~4.4.2~~	~~Explain the link between PSR/SSR with automated systems.~~	2	

BASIC EQPSB 5.4.2 4.4.3	Explain the advantages and disadvantages of PSR/SSR.	2	
Subtopic EQPSB 5.5 Mode S			
BASIC EQPSB 5.5.1 4.5.1	Explain ~~State~~ the principles of Mode S.	1->2	
BASIC EQPSB 5.5.2 4.5.2	Explain the use of Mode S in ATC systems.	2	
TOPIC EQPSB 6 AUTOMATIC DEPENDENT SURVEILLANCE			
Subtopic EQPSB 6.1 Principles of automatic dependent surveillance			
BASIC EQPSB 6.1.1	State the different applications of ADS.	1	ADS-B, ADS-C
BASIC EQPSB 6.1.2 5.1.1	Explain ~~State~~ the working principles of ADS.	1->2	~~Satellites, data links~~
Subtopic EQPSB 6.2 Use of automatic dependent surveillance			
BASIC EQPSB 6.2.1 5.1.2	Describe ~~Explain~~ the use ~~and limitations~~ of ADS in ATC.	2	Area, approach, aerodrome ICAO Doc 4444
BASIC EQPSB 6.2.2 5.1.2	Explain the ~~use and~~ limitations of ADS.	2	Dependency on GNSS, dependency on airborne equipment
TOPIC EQPSB 7 MULTILATERATION			
Subtopic EQPSB 7.1 Principles of multilateration			
BASIC EQPSB 7.1.1	State the different applications of MLAT.	1	*Optional content: ATC, environmental management, airport operations, LAM, WAM*
BASIC EQPSB 7.1.2	Explain the working principles of MLAT.	2	*Optional content: passive and active MLAT*

Subtopic	**EQPSB 7.2 Use of multilateration**		
BASIC EQPSB 7.2.1	Describe the use of MLAT in ATC.	2	Area, approach, aerodrome
BASIC EQPSB 7.2.2	Explain the limitations of MLAT.	2	Dependency on airborne equipment
TOPIC	**EQPSB 8 SURVEILLANCE DATA PROCESSING**		
Subtopic	**EQPSB 8.1 Surveillance data networking**		
BASIC EQPSB 8.1.1	Explain the advantages and disadvantages of different surveillance technologies.	2	Data quality, coverage, refresh rate, reliability, redundancy, cost-effectiveness
BASIC EQPSB 8.1.2	Describe the implementation of Surveillance Data Networks.	2	*Optional content: different technologies/sensors, network*
Subtopic	**EQPSB 8.2 Working principles of surveillance data networking**		
BASIC EQPSB 8.2.1	Explain the working principles of surveillance data processing.	2	Track fusion process, surveillance information presented on CWP
BASIC EQPSB 8.2.2	State other use of processed surveillance data.	1	*Optional content: safety nets, airport operations, environmental management*
TOPIC	**EQPSB 9 FUTURE EQUIPMENT**		
Subtopic	**EQPSB 9.1 ~~Future Equipment~~ New developments**		
BASIC EQPSB 9.1.1 6.1.1	State the ~~Be aware of~~ developments in the equipment field for introduction in the near future.	0->1	~~Equipment to be introduced beyond training period~~
TOPIC	**EQPSB 10 AUTOMATION IN ATS**		
Subtopic	**EQPSB 10.1 ~~General~~ Principles of automation**		
BASIC EQPSB 10.1.1 7.1.1	Describe the principles of automation in communication and datalinks in ATS.	2	
Subtopic	**EQPSB 10.2 Aeronautical fixed telecommunication network (AFTN)**		

BASIC EQPSB 10.2.1 7.2.1	Describe the principles of AFTN.	2	
Subtopic EQPSB 10.3 On-line data interchange			
BASIC EQPSB 10.3.1 7.3.1	Describe ~~Recognise~~ the benefits of automatic exchange of ATS data in coordination and transfer processes.	1->2	Accuracy, speed and safety, non-verbal communications
BASIC EQPSB 10.3.2 7.3.2	Describe ~~Recognise~~ the limitations of automatic exchange of ATS data in coordination.	1->2	Non-recognition of a systems failure
Subtopic EQPSB ~~10.4~~ ~~Closed circuit information system~~			
BASIC EQPSB ~~10.4.1~~ 7.4.1	~~State the principles of CCIS.~~	1	
BASIC EQPSB ~~10.4.2~~ 7.4.2	~~Explain the use of CCIS in ATS.~~	2	~~Data carried on CCIS~~
Subtopic EQPSB 10.4 Systems used for the automatic dissemination of information			
BASIC EQPSB 10.4.1 7.5.1	State the working principles of broadcasting systems.	1	*Optional content: ATIS, VOLMET*
BASIC EQPSB 10.4.2 7.5.2	Explain the use of ATIS and VOLMET in ATS.	2	
TOPIC EQPSB 11 WORKING POSITIONS			
Subtopic EQPSB 11.1 ~~General~~ Working position equipment			
BASIC EQPSB 11.1.1 8.1.1	Recognise equipment in a working position.	1	*Optional content: FPB, radio, telephone and other communication equipment, relevant maps and charts, strip printer, teleprinter, clock, information monitors, ~~radars/~~ situation displays*
Subtopic EQPSB 11.2 Aerodrome control			

BASIC EQPSB 11.2.1 8.2.1	Recognise equipment to be found specifically in a TWR.	1	*Optional content: wind indicator, aerodrome traffic monitor, ~~DFTI,~~ SMR, crash alarm, signalling lamp, lighting control panel, runway-in-use indicator, binoculars, signalling/flare gun, IRVR and altimeter setting indicators, local information systems ~~CCIS~~*
Subtopic EQPSB 11.3 Approach control			
BASIC EQPSB 11.3.1 8.3.1	Recognise equipment to be found specifically in an APP.	1	*Optional content: sequencing system, PAR, RVR indicators*
Subtopic EQPSB 11.4 Area control			
BASIC EQPSB 11.4.1 8.4.1	Recognise equipment to be found specifically in an ACC.	1	

Subject 9 : PROFESSIONAL ENVIRONMENT

The ~~general~~ subject objective is:

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

TOPIC PENB 1 FAMILIARISATION

Subtopic PENB 1.1 ~~Familiarisation~~ ATS and aerodrome facilities

BASIC PENB 1.1.1	Recognise civil and military ATS facilities.	1	*Optional content: TWR, APP, ACC, AIS, RCC, ~~Radar,~~ Air Defence Unit*
BASIC PENB 1.1.2	Recognise airport facilities and local operators.	1	*Optional content: fire and emergency services, airline operations ~~office~~*

TOPIC PENB 2 AIRSPACE USERS

Subtopic PENB 2.1 Civil aviation

BASIC PENB 2.1.1	Describe ~~Name~~ airspace ~~requirements~~ usage ~~for~~ by civil aircraft.	1->2	*Optional content: commercial flying, recreational flying, gliders, balloons, calibration flights, aerial photography, parachute dropping, UASs*

Subtopic PENB 2.2 Military ~~aviation~~

BASIC PENB 2.2.1	Describe ~~Name~~ airspace ~~requirements for~~ usage by the military ~~aircraft~~.	1->2	Airspace reservations, training, interception, in-flight refuelling, UASs *Optional content: low-level flying, ~~in-flight refuelling,~~ test flights, special military operations*

Subtopic PENB 2.3 Expectations and requirements of pilots

BASIC PENB 2.3.1	Recognise ~~Be aware of~~ the expectations and requirements of pilots.	0->1	
BASIC PENB 2.3.2	State the use of standard operating procedures (SOPs) by aircraft operators.	1	

TOPIC PENB 3 CUSTOMER RELATIONS

Subtopic PENB 3.1 Customer relations

BASIC PENB 3.1.1	State the role of ATC as a service provider.	1	
BASIC PENB 3.1.2	Recognise the means by which ATC is funded.	1	

TOPIC	**PENB 4 ENVIRONMENTAL PROTECTION**			
Subtopic	**PENB 4.1 Environmental protection**			
	BASIC PENB ~~4.1.1~~	~~Recognise the importance of environmental protection.~~	1	~~Air, water, noise~~
	BASIC PENB 4.1.1	Describe the impact aviation has on the environment.	2	Noise, air quality, climate change, third-party risks
	BASIC PENB 4.1.2	Explain the role of ATC in the concept of sustainable development.	2	*Optional content: ICAO Annex 16*
	BASIC PENB 4.1.3	State how to measure, monitor and mitigate the impact aviation has on the environment.	1	*Optional content: EU ETS, SES initiative, EUROCONTROL role, continuous descent operations (CDO), collaborative environmental management (CEM)*

AMC1 to Appendix 3 of ANNEX I — PART-ATCO

Aerodrome Control Visual Rating (ADV)

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.0 -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

3.3.3 - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

TABLE OF CONTENTS

Subject 1 : INTRODUCTION TO THE COURSE

The ~~general~~ subject objective is:

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

INTR 1	**COURSE MANAGEMENT**			
INTR 1.1	**Course introduction**			
ADV INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
INTR 1.2	**Course administration**			
ADV INTR 1.2.1	State course administration.	1		ALL
INTR 1.3	**Study material and training documentation**			
ADV INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ADV INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: ~~Training documentation~~, supplementary information, library*	ALL
INTR 2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
INTR 2.1	**Course content and organisation**			
ADV INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
ADV INTR 2.1.2	State the subjects of the course and their purpose.	1		ALL
ADV INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ADV INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
INTR 2.2	**Training ethos**			
ADV INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner/instructor feedback, instructor/instructor feedback	ALL
INTR 2.3	**~~The~~ Assessment process**			
ADV INTR 2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The ~~general~~ subject 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.

LAW 1	**ATCO LICENSING / CERTIFICATE OF COMPETENCE**			
LAW 1.1	**Privileges and conditions**			
ADV LAW 1.1.1	Appreciate the conditions which ~~must~~ shall be met to ~~for the~~ issue an ~~of~~ Aerodrome Control Visual rating.	3	~~EU Community air traffic controller licence Directive, ESARR5~~ Regulation (EU) 2015/340 on ATCO Licences, ~~- rating, valid rating~~ *Optional content: National documents~~, ~~European Manual of Personnel Licensing - Air Traffic Controllers~~*	ADV
ADV LAW 1.1.2 6.1.1 HUM	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ADV LAW 1.1.3 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	~~Incident/Accident, Competence in doubt, Medical,~~ Regulation (EU) 2015/340 on ATCO Licences	ALL
LAW 2	**RULES AND REGULATIONS**			
LAW 2.1	**Reports**			
ADV LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report *Optional content: routine air reports, breach of regulations, watch/log book, records*	ALL
ADV LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	~~ESARR 2~~, Reporting culture, air traffic incident report *Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2*	ALL
ADV LAW 2.1.3	Use forms for reporting.	3	Regulation (EU) No 376/2014, air traffic incident reporting form(s) *Optional content: ~~ICAO Doc 4444 Appendix 4~~, routine air reports, breach of regulations, watch/log book, records*	ALL
LAW 2.2	**Airspace**			
ADV LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Aerodrome Control Visual rating operations.	3		ADV

ADV LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*Optional content: Regulation (EU) No 923/2012, ICAO Annex 2, ICAO Annex 11, international requirements, civil requirements, military requirements, areas of responsibility, sectorization, national requirements*	ALL
ADV LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL
LAW 3	**ATC SAFETY MANAGEMENT**			
LAW 3.1	**~~Experience~~ Feedback process**			
ADV LAW 3.1.1 10.1.1 HUM	State the importance of ~~the~~ controller~~s~~ contribution to the ~~experience~~ feedback process.	1	*Optional content: voluntary reporting*	ALL
ADV LAW 3.1.2 10.1.2 HUM	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, local procedures*	ALL
ADV LAW 3.1.3 10.1.3 HUM	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards web pages*	ALL
ADV LAW 3.1.4 10.1.4 HUM	Appreciate ~~Explain~~ the 'Just Culture' concept.	2->3	Benefits, prerequisites, constraints *Optional content: EAM 2 GUI 6, GAIN Report*	ALL
LAW 3.2	**Safety Investigation ~~Branch~~**			
ADV LAW 3.2.1 10.2.1 HUM	Describe role and mission of Safety Investigation ~~Branch~~ in the improvement of safety.	2		ALL
ADV LAW 3.2.2 10.2.2 HUM	Define working methods of Safety Investigation ~~Branch~~.	1		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The ~~general~~ subject objective is:

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

ATM 1	**PROVISION OF SERVICES ~~AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT~~**			
ATM 1.1	**Aerodrome control service**			
ADV ATM 1.1.1 1.1.2	Appreciate areas of responsibility.	3	Control zone, traffic circuit, manoeuvring area, movement area, vicinity *Optional content: ATZ*	ADV ADI
ADV ATM ~~1.1.1~~	~~Describe specific areas of responsibility of aerodrome control.~~	2	~~ICAO Annex 11~~	ADV ADI
ADV ATM 1.1.2 1.1.3	Provide ~~the appropriate~~ aerodrome control service.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals	ADV ADI
ATM 1.2	**Flight information service (FIS)**			
ADV ATM 1.2.1	Describe the information that shall be passed to aircraft by an aerodrome controller.	2	ICAO Doc 4444 ~~ICAO Annex 11~~	ADV ADI
ADV ATM 1.2.2	Provide FIS.	4	ICAO Doc 4444 *Optional content: national documents*	*ALL*
ADV ATM 1.2.3	Issue appropriate ~~traffic~~ information.	3	ICAO Doc 4444, essential local traffic, traffic information	ADV ADI
ADV ATM 1.2.4	Appreciate the use of ATIS for the provision of flight information service by aerodrome controller.	3		ADV ADI
ATM 1.3	**Alerting service (ALRS)**			
ADV ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444 *Optional content: national documents*	ALL
ADV ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10, ICAO Doc 4444, *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations*	ALL
ATM 1.4	**ATS System capacity and air traffic flow management**			
ADV ATM 1.4.1	Appreciate principles of ~~ATFCM~~ ATS system capacity and air traffic flow management.	3	*Optional content: EUROCONTROL ATFCM Users Manual ~~Working principles of ATFCM, CFMU,~~ Slot management, Slot allocation procedures*	ADV ADI

ADV ATM 1.4.2	Organise traffic to take account of flow management.	4	*Optional content: departure sequence*	ADV ADI
ADV ATM 1.4.3	Inform appropriate authority.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information: reported ground-based incidents, forest fire, smoke, oil pollution*	ADV ADI
ATM 2	**COMMUNICATION**			
ATM 2.1	**Effective communication**			
ADV ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *Optional content: ICAO Doc 9432 RTF manual, standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
ADV ATM 2.1.2	Ensure effective ~~Perform~~ communication. ~~effectively.~~	3->4	Communication techniques, readback/verification of readback	ALL
ADV ATM ~~2.1.3~~ 6.1.2 HUM	~~Analyse examples of pilot and controller communication for effectiveness.~~	4		ALL
ATM 3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
ATM 3.1	**ATC clearances**			
ADV ATM 3.1.1	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ADV ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
ADV ATM 3.1.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 3.2	**ATC instructions**			
ADV ATM 3.2.1	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ADV ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
ADV ATM 3.2.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 4	**COORDINATION**			
ATM 4.1	**Necessity for coordination**			
ADV ATM 4.1.1	Identify the need for coordination.	3		ALL

ATM 4.2	**Tools and methods for coordination**			
ADV ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
ATM 4.3	**Coordination procedures**			
ADV ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *Optional content: release point*	ALL
ADV ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
ADV ATM 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
ADV ATM 4.3.4	Ensure the agreed course of action is carried out.	4		ALL
ADV ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
ADV ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
ATM 5	**ALTIMETRY AND LEVEL ALLOCATION**			
ATM 5.1	**Altimetry**			
ADV ATM 5.1.1	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.	4	ICAO Doc 8168, ICAO Doc 4444	ALL
ADV ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
ATM 6	**SEPARATIONS**			
ATM 6.1	**Separation between departing aircraft**			
ADV ATM 6.1.1	Provide separation between departing aircraft.	4	ICAO Doc 4444	ADV ADI
ATM 6.2	**Separation of landing aircraft and preceding landing or departing aircraft**			

ADV ATM 6.2.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	ICAO Doc 4444	ADV *ADI*
ATM 6.3	**Time-based wake turbulence longitudinal separation**			
ADV ATM 6.3.1	Provide time-based wake turbulence longitudinal separation.	4	ICAO Doc 4444	ADV *ADI*
ATM 6.4	**Reduced separation minima**			
ADV ATM 6.4.1	Provide reduced separation minima.	4	ICAO Doc 4444	ADV *ADI*
ATM 7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
ATM 7.1	**Airborne collision avoidance systems**			
ADV ATM 7.1.1 7.1.6 B	Differentiate between ACAS advisory thresholds and ~~ATC~~ aerodrome separation standards.	2	ICAO Doc 9863	ADV ADI
ADV ATM 7.1.2 7.1.4 B	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444	ALL
ADV ATM 7.1.3 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, ~~GPWS~~ TAWS *Optional content: EUROCONTROL ACAS web page*	ALL
ATM 7.2	**Ground-based safety nets**			
ADV ATM 7.2.1	Respond to available ground-based safety nets warnings.	3	*Optional content: anti-incursion*	ADV ADI
ATM 8	**DATA DISPLAY**			
ATM 8.1	**Data management**			
ADV ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
ADV ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
ADV ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
ADV ATM ~~8.1.4~~	~~Process pertinent data on data displays.~~	3		ALL
ADV ATM 8.1.4 8.1.5	Obtain flight plan information.	3	CPL, FPL, supplementary information *Optional content: RPL, AFIL, etc.*	ALL

ADV ATM 8.1.5 8.1.6	Use flight plan information.	3		ALL

ATM 9 OPERATIONAL ENVIRONMENT (SIMULATED)

ATM 9.1 Integrity of the operational environment

ADV ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: briefing, notices, local orders, verification of information*	ALL
ADV ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: frequency, VOLMET, ATIS, SIGMET, systems set-up, integrity of displays*	ADV ADI

ATM 9.2 Verification of the currency of operational procedures

ADV ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, LOAs, NOTAM, AICs*	ALL

ATM 9.3 Handover-takeover

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

ATM 10 PROVISION OF AN AERODROME CONTROL SERVICE

ATM 10.1 ~~General~~ Responsibility for the provision

ADV ATM 10.1.1	Explain the responsibility for the provision of an aerodrome control service.	2	ICAO Doc 4444, ICAO Annex 11	ADV ADI
ADV ATM 10.1.2	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	*ALL*
ADV ATM 10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ADV ATM 10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	ADV ADI
ADV ATM 10.1.5 3.5.1 ACFT	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*

ATM 10.2 Functions of aerodrome control tower

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

ATM 10.3 Traffic management process				
ADV ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, observation, traffic projection	ADV ADI
ADV ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		ALL
ADV ATM 10.3.3	Identify potential solutions to achieve a safe and effective flow of aerodrome traffic.	3		ADV ADI
ADV ATM 10.3.4	Evaluate possible outcomes of different control actions.	5		ADV ADI
ADV ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective flow of aerodrome traffic.	5		ADV ADI
ADV ATM 10.3.6 10.5.4	Ensure an adequate priority of actions.	4	~~Formal and situational requirements, Workload~~	*ALL*
ADV ATM 10.3.7	Execute plan in a timely manner.	3		ADV ADI
ADV ATM 10.3.8	Ensure a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow up	ALL
ATM 10.4 Aeronautical ground lights				
ADV ATM 10.4.1 10.3.1	Select appropriate aeronautical ground lights.	5	ICAO Doc 4444	ADV ADI
ATM 10.5 Information to aircraft by aerodrome control tower				
ADV ATM 10.5.1 10.4.1	Provide information related to the operation of aircraft.	4	ICAO Doc 4444	ADV ADI
ADV ATM 10.5.2 10.4.2	Provide information on aerodrome conditions.	4	ICAO Doc 4444	ADV ADI
ATM 10.6 Control of aerodrome traffic				
ADV ATM 10.6.1 10.5.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	ICAO Doc 4444	ADV ADI
ADV ATM 10.6.2 10.5.2	Manage traffic on the manoeuvring area.	4	ICAO Doc 4444, aircraft, vehicles *Optional content: runway inspection*	ADV ADI

ADV ATM 10.6.3 10.5.3	Manage traffic in accordance with procedural changes.	4	*Optional content: taxiway closure*	ADV ADI
ADV ATM 10.6.4	Balance the workload against personal capacity.	5	*Optional content: re-planning, prioritising solutions, denying requests, delaying traffic*	ADV ADI
ADV ATM ~~10.5.4~~ 10.3.6	~~Ensure an adequate priority of actions.~~	4	~~Formal and situational requirements, Workload~~	ADV ADI
ATM 10.7 Control of traffic in the traffic circuit				
ADV ATM 10.7.1 10.6.1	Manage traffic in the traffic circuit.	4	ICAO Doc 4444, meteorological phenomena, geographical knowledge, environmental factors	ADV ADI
ADV ATM 10.7.2 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
ADV ATM 10.7.3 10.6.3	Integrate the serviceability of radio aids in the management of aerodrome traffic.	4	*Optional content: UDF, VDF, MLS, ILS, NDB, VOR, DME*	ADV ADI
ADV ATM 10.7.4 10.6.4	Integrate surface conditions into the control of aerodrome traffic.	4	*Optional content: damp, wet, water patches, flooding, snow, slush, ice, braking action*	ADV ADI
ADV ATM 10.7.5 10.6.5	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	*Optional content: clouds, precipitation, visibility, wind, meteorological hazards*	ADV ADI
ADV ATM 10.7.6 10.6.6	Integrate the information provided by situation displays.	4	Use, advantages, disadvantages	ADV ADI
ADV ATM 10.7.7	Initiate missed approach.	3	*Optional content: obstructed runway*	ADV ADI
ATM 10.8 Runway in use				
ADV ATM 10.8.1 10.7.1	Select the runway in use.	5	ICAO Doc 4444	ADV ADI
ADV ATM 10.8.2 10.7.2	Coordinate runway in use.	4	*Optional content: approach control, area control, runway selection, change of runway*	ADV ADI
ADV ATM 10.8.3 10.7.3	Manage traffic in the event of runway-in-use change.	4		ADV ADI

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

MET 1	**METEOROLOGICAL PHENOMENA**			
MET 1.1	**Meteorological phenomena**			
ADV MET 1.1.1	Appreciate the impact of different cloud types.	3	Cumulus, cumulonimbus *Optional content: stratus, nimbostratus, etc.*	ADV ADI
ADV MET 1.1.2	Appreciate the impact of precipitation.	3	Precipitation and microphysics *Optional content: rain, snow, sleet, hail*	ADV ADI
ADV MET 1.1.3	Appreciate the impact of atmospheric obscurity.	3	*Optional content: advection fog, radiation fog, mixing, evaporation, Mist, drizzle*	ADV ADI
ADV MET 1.1.4	Appreciate the effect and impact of wind.	3	Gusting, veering, backing *Optional content: land breezes, sea breezes, Föhn*	ADV ADI
ADV MET 1.1.5	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Wind shear, turbulence, thunderstorms, icing, microbursts	ADV ADI
ADV MET 1.1.6	Appreciate the effect of a frontal system on aerodrome operations.	3		ADV ADI
ADV MET 1.1.7	Integrate data about meteorological phenomena into provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena*	*ALL*
MET 2	**SOURCES OF METEOROLOGICAL DATA**			
MET 2.1	**Meteorological instruments**			
ADV MET 2.1.1	Extract information from meteorological instruments.	3	*Optional content: anemometer, RVR indicator, cloud base indicator, ceilometer, barometer*	ADV ADI
MET 2.2	**Other sources of meteorological data**			
ADV MET 2.2.1	Decode information from meteorological data displays.	3		ADV ADI
ADV MET 2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3		ADV ADI
ADV MET 2.2.3	Relay meteorological information. ~~from pilot reports.~~	3	ICAO Doc 4444 *Optional content: flight information centre, adjacent ATS unit*	*ALL*

Subject 5 : NAVIGATION

The ~~general~~ subject objective is:

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

NAV 1	**MAPS AND AERONAUTICAL CHARTS**			
NAV 1.1	**Maps and charts**			
ADV NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Visual approach/departure charts, ~~Instrument approach charts,~~ aerodrome charts *Optional content: military maps and charts*	ADV
ADV NAV 1.1.2	Use relevant maps and charts.	3	Visual approach/departure charts, aerodrome charts *Optional content: military maps and charts*	ADV
NAV 2	**INSTRUMENT~~AL~~ NAVIGATION**			
NAV 2.1	**Navigational systems**			
ADV NAV 2.1.1	Describe the possible operational status of navigational systems.	2	*Optional content: NDB, VOR, DME*	ADV
ADV NAV 2.1.2	Decode operational status displays of navigational systems.	3	*Optional content: NDB, VOR, DME*	ADV
ADV NAV 2.1.3	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*Optional content: limitations, status, degraded procedures*	*ALL*
ADV NAV ~~2.1.4~~	~~Manage traffic in case of change in the operational status of navigational systems.~~	4	~~*Optional content: limitations, status of ground based systems*~~	ADV
NAV 2.2	**Stabilised approach**			
ADV NAV 2.2.1	Describe the concept of stabilised approach.	2	ICAO Doc 8168 *Optional content: SKYbrary, Regulation (EC) No 1899/2006*	ADV ADI APP APS
ADV NAV 2.2.2	Appreciate the effect of late change of runway-in-use for landing aircraft.	3		ADV ADI

Subject 6 : AIRCRAFT

The ~~general~~ subject objective is:

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

ACFT 1	**AIRCRAFT INSTRUMENTS**			
ACFT 1.1	**Aircraft instruments**			
ADV ACFT 1.1.1	Integrate ~~the~~ information ~~indication~~ from aircraft instruments provided by the pilot in the provision of ATS.	4	~~*Optional content: TCAS, wind shear indicator, weather radar*~~	ALL
ADV ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios, ~~SELCAL~~*	ALL
ADV ACFT 1.1.3	~~Explain the operation of transponder equipment.~~	2	~~Transponders: equipment Mode A, Mode C, Mode S~~	ADV APP ACP
ADV ACFT ~~1.1.4~~	~~Explain the use and benefits of CPDLC.~~	2		ALL
ACFT 2	**AIRCRAFT CATEGORIES**			
ACFT 2.1	**Wake turbulence ~~categories~~**			
ADV ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
ADV ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
ACFT 3	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**			
ACFT 3.1	**Take-off factors**			
ADV ACFT 3.1.1	Integrate the influence of factors affecting aircraft on take-off.	4	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	ADV ADI
ACFT 3.2	**Climb factors**			
ADV ACFT 3.2.1	Appreciate the influence of factors affecting aircraft during climb.	3	*Optional content: speed, mass, air density, wind and temperature*	ADV ADI
ACFT 3.3	**Final approach and landing factors**			
ADV ACFT 3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, runway conditions, runway slope, aerodrome elevation*	ADV ADI
ACFT 3.4	**Economic factors**			

ADV ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: starting-up, taxiing, routing, departure sequence*	ADV ADI
ACFT ~~3.5~~ ~~Miscellaneous factors~~				
ADV ACFT ~~3.5.1~~ 10.1.5 ATM	~~Appreciate the influence of operational requirements.~~	3	~~*Optional content: Military flying, Calibration flights, Aerial photography, banner towing*~~	ADV ADI
ACFT 3.5 ~~Ecological~~ Environmental factors				
ADV ACFT 3.5.1 3.6.1	Appreciate the performance restrictions due to environmental constraints. ~~Estimate the influence of ecological factors affecting aircraft.~~	3	*Optional content: noise abatement procedures, minimum flight altitudes, bird hazard*	ADV ADI
ACFT 4 AIRCRAFT DATA				
ACFT 4.1 Recognition of aircraft types				
ADV ACFT 4.1.1	Characterise a representative sample of aircraft which will be encountered in the operational/working environment.	2	Recognition, ICAO type designators, wake turbulence categories ~~*Optional content: ICAO Approach Categories*~~	ADV
ACFT 4.2 Performance data				
ADV ACFT 4.2.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of a control service.	4	Performance data under a representative variety of circumstances	ADV ADI
ADV ACFT ~~4.2.2~~ 1.1.2 ABES	~~Identify potential or actual emergency situations.~~	3		ADV ADI

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

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

HUM 1	**PSYCHOLOGICAL FACTORS**			
HUM 1.1	**Cognitive**			
ADV HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
ADV HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
ADV HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
HUM 2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
HUM 2.1	**Fatigue**			
ADV HUM 2.1.1	State factors that cause fatigue.	1	Shift work *Optional content: night shifts and rosters*	ALL
ADV HUM 2.1.2	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ADV HUM 2.1.3	Recognise the onset of fatigue in self.	1	*Optional content: ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ADV HUM 2.1.4	Recognise the onset of fatigue in others.	1		ALL
ADV HUM 2.1.5	Describe ~~Consider~~ appropriate action when recognising fatigue.	2		ALL
HUM 2.2	**Fitness**			
ADV HUM 2.2.1	Recognise signs of lack of personal fitness.	1		ALL
ADV HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
HUM 3	**SOCIAL AND ORGANISATIONAL FACTORS**			
HUM 3.1	**Team resource management (TRM)**			

ADV HUM 3.1.1	State the relevance ~~objectives~~ of TRM.	1	*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
ADV HUM 3.1.2	State the content of the TRM concept.	1	*Optional content: team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
HUM 3.2	**Teamwork and team roles**			
ADV HUM 3.2.1	Identify reasons for conflict.	3		ALL
ADV HUM 3.2.2	Describe actions to prevent human conflicts.	2	*Optional content: TRM team roles*	ALL
ADV HUM 3.2.3	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
HUM 3.3	**Responsible behaviour**			
ADV HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
ADV HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
HUM 4	**STRESS**			
HUM 4.1	**Stress**			
ADV HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
HUM 4.2	**Stress management**			
ADV HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, the benefits of active stress management	ALL
ADV HUM 4.2.2	Respond to stressful situation by offering, asking or accepting assistance. ~~Obtain assistance in stressful situations.~~	3	*Optional content: the benefits of offering, accepting and asking for help in stressful situations*	ALL
ADV HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, abnormal situations, CISM	ALL
ADV HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
ADV HUM 4.2.5	Explain procedures used following an incident/accident.	2	*Optional content: CISM, counselling, human element*	ALL
HUM 5	**HUMAN ERROR**			

HUM 5.1	**Human error**			
ADV HUM 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 *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADV HUM 5.1.2	Differentiate between the types of error.	2	Slips, lapses, mistakes *Optional content: ~~Slips, Lapses, Mistakes~~ ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADV HUM 5.1.3	Describe error-prone conditions.	2	*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
ADV HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADV HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADV HUM 5.1.6	Execute corrective actions.	3	Error compensation *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADV HUM 5.1.7	Explain the importance of error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practises*	ALL
ADV HUM 5.1.8	Describe the impact on an ATCO following an occurrence/incident.	2	*Optional content: reporting, SMS, investigation, CISM*	ALL
HUM 5.2	**Violation of rules**			
ADV HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
HUM ~~6~~	**~~WORKING METHODS~~**			
HUM ~~6.1~~	**~~Efficiency~~**			
ADV HUM ~~6.1.1~~	~~Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.~~	2	~~*Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety*~~	ALL
HUM 6	**COLLABORATIVE WORK**			
HUM 6.1	**Communication**			

ADV HUM 6.1.1 8.1.1	Use communication effectively in ATC.	3		ALL
ADV HUM 6.1.2 2.1.3 ATM	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
HUM 6.2	**Collaborative work within the same area of responsibility**			
ADV HUM 6.2.1 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ADV HUM 6.2.2 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*Optional content: strips legibility and encoding, ~~Radar~~ labels designation, feedback*	ALL
ADV HUM 6.2.3 8.2.3	List possible actions to provide a safe position handover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ADV HUM 6.2.4 8.2.4	Explain consequences of a missed position handover process.	2		ALL
HUM 6.3	**Collaborative work between different areas of responsibility**			
ADV HUM 6.3.1 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*Optional content: other sectors constraints, electronic coordination tools*	ALL
HUM 6.4	**Controller/pilot cooperation**			
ADV HUM 6.4.1 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*Optional content: workload, mutual knowledge, controller vs pilot mental picture*	ALL
HUM ~~7~~	**~~WORKING KNOWLEDGE~~**			
HUM ~~7.1~~	**~~Controller knowledge~~**			
ADV HUM ~~7.1.1~~ 1.1.2 LAW	~~Explain how to maintain and update professional knowledge to retain competence in the operational environment.~~	2	~~*Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*~~	ALL
HUM ~~9~~	**~~WORK ENVIRONMENT~~**			
HUM ~~9.1~~	**~~Ergonomics~~**			
ADV HUM ~~9.1.1~~	~~Appreciate the impact of working position ergonomics on controller activity.~~	3		ALL
HUM ~~10~~	**~~ATC SAFETY MANAGEMENT~~**			
HUM ~~10.1~~	**~~Experience feedback~~**			

ADV HUM ~~10.1.1~~ 3.1.1 LAW	~~State the importance of the controllers contribution to the experience feedback process.~~	1	~~*Optional content: voluntary reporting*~~	ALL
ADV HUM ~~10.1.2~~ 3.1.2 LAW	~~Describe how reported occurrences are analysed.~~	2	~~*Optional content: ESARR2, local procedures*~~	ALL
ADV HUM ~~10.1.3~~ 3.1.3 LAW	~~Name the means used to disseminate recommendations.~~	1	~~*Optional content: Safety letters, safety boards web pages*~~	ALL
ADV HUM ~~10.1.4~~ 3.1.4 LAW	~~Explain the "Just Culture" concept.~~	2	~~benefits, prerequisites, constraints~~ ~~*Optional content: EAM 2 GUI 6, GAIN Report*~~	ALL
HUM ~~10.2~~ ~~Safety investigation branch~~				
ADV HUM ~~10.2.1~~ 3.2.1 LAW	~~Describe role and mission of Safety Investigation Branch in the improvement of safety.~~	2		ALL
ADV HUM ~~10.2.2~~ 3.2.2 LAW	~~Define working methods of Safety Investigation Branch.~~	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject 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.

EQP 1	**VOICE COMMUNICATIONS**			
EQPS 1.1	**Radio communications**			
ADV EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ADV EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
EQPS 1.2	**Other voice communications**			
ADV EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL
EQP 2	**AUTOMATION IN ATS**			
EQPS 2.1	**Aeronautical fixed telecommunication network (AFTN)**			
ADV EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
EQPS 2.2	**Automatic data Interchange**			
ADV EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	ADV ADI APS ACS
ADV EQPS 2.2.2	Explain operational application of CPDLC for departure clearance (DCL) delivery and D-ATIS.	2	ICAO Doc 9694	ADV ADI
EQP 3	**CONTROLLER WORKING POSITION**			
EQPS 3.1	**~~General~~ Operation and monitoring of equipment**			
ADV EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ADV EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems ~~monitors, (CCIS)~~, UDF/VDF*	ALL
ADV EQPS 3.1.3	Operate ~~all~~ available equipment in ~~unusual/degraded/~~abnormal and emergency situations.	3		ALL

EQPS 3.2	**Situation displays and information systems**			
ADV EQPS 3.2.1	Use situation displays.	3		ALL
ADV EQPS 3.2.2	Check availability of information material.	3		ALL
ADV EQPS 3.2.3	Obtain information from equipment.	3	*Optional content: information from wind direction indicator*	ADV ADI
ADV EQPS ~~3.2.4~~	~~Take account of anti-incursion equipment.~~	2		ADV
EQPS 3.3	**Flight data systems**			
ADV EQPS 3.3.1	Use the flight data information at controller working position.	3		ALL
EQP 4	**FUTURE EQUIPMENT**			
EQPS 4.1	**New developments**			
ADV EQPS 4.1.1	Recognise future developments.	1	New advanced systems	ALL
EQP 5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
EQPS 5.1	**~~General~~ Reaction to limitations**			
ADV EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
ADV EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
EQPS 5.2	**Communication equipment degradation**			
ADV EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground-air, ground-ground and landline communications*	ADV ADI
ADV EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	*Optional content: total or partial degradation of ground-air, ground-ground and landline communications; alternative methods of transferring data*	ADV ADI
EQPS 5.3	**Navigational equipment degradation**			
ADV EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: VOR, navigational aids*	ALL
ADV EQPS ~~5.3.2~~	~~Integrate contingency procedures in the event of a navigational equipment degradation.~~	4	~~*Optional content: Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units*~~	ADV

Subject 9 : PROFESSIONAL ENVIRONMENT

The ~~general~~ subject objective is:

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

PEN 1	**FAMILIARISATION ~~PROFESSIONAL ENVIRONMENT~~**			
PEN 1.1	**Study visit to aerodrome**			
ADV PEN 1.1.1	Appreciate the functions and provision of an operational aerodrome control service.	3	Study visit to TWR	ADV ADI
PEN 2	**AIRSPACE USERS**			
PEN 2.1	**Contributors to civil ATS operations**			
ADV PEN 2.1.1 1.1.1	Characterise civil ~~and military~~ ATS activities at aerodrome.	2	Study visit to TWR *Optional content: familiarisation visits to ~~e.g. TWR,~~ APP, ACC, AIS, RCC~~, Air Defence Units~~*	ADV ADI
ADV PEN 2.1.2 1.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to ~~e.g.~~ engineering services, fire and emergency services, airline operations offices*	ALL
PEN 2.2	**Contributors to military ATS operations**			
ADV PEN 2.2.1 1.1.1	Characterise ~~civil and~~ military ATS activities.	2	*Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
PEN 3	**CUSTOMER RELATIONS**			
PEN 3.1	**~~Customer relations~~ Provision of services and user requirements**			
ADV PEN 3.1.1 1.2.1	Identify the role of ATC as a service provider. ~~and the requirements of the ATS users.~~	3	~~*Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*~~	ALL
ADV PEN 3.1.2 1.2.1	Appreciate ATS users requirements.	3		ALL
PEN 4	**ENVIRONMENTAL PROTECTION**			
PEN 4.1	**Environmental protection**			
ADV PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Circular 303 - Operational opportunities to minimise fuel use and reduce emissions*	ADV ADI APP APS

ADV PEN 4.1.2 1.3.1	Explain the use of Collaborative Environmental Management (CEM) process at airports. ~~Describe processes used to ensure environmental protection.~~	2	~~*Optional content: night curfews, relations with local community; relations with environmental associations, relevant administrations*~~	ADV ADI APP APS
ADV PEN 4.1.3	Appreciate the mitigation techniques used at aerodromes to minimise aviation's impact on the environment.	3	*Optional content: noise abatement procedures, flight efficiency*	ADV ADI

Subject 10: ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS

The ~~general~~ subject objective is:

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

ABE 1	**~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS (ABES)**			
ABES 1.1	**~~General~~ Overview of ABES**			
ADV ABES 1.1.1	List common ~~unusual/degraded/~~abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure, unreliable instruments, runway incursion*	ALL
ADV ABES 1.1.2 4.1.2 ACFT	Identify potential or actual abnormal and emergency situations.	3		ALL
ADV ABES 1.1.3 1.1.2	Take into account the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	2	Bird strike, aborted take-off *Optional content: ICAO Doc 4444*	ADV ADI
ADV ABES 1.1.4 1.1.3	Take into account that procedures do not ~~don't~~ exist for all ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: real life examples*	ALL
ADV ABES 1.1.5 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL
ABE 2	**SKILLS IMPROVEMENT**			
ABES 2.1	**Communication effectiveness**			
ADV ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, silence instruction	ALL
ADV ABES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
ABES 2.2	**Avoidance of mental overload**			
ADV ABES 2.2.1	Describe actions to keep ~~the~~ control of the situation.	2	*Optional content: sector splitting, holding, flow management, task delegation*	ALL
ADV ABES 2.2.2	Organise priority of actions.	4		ALL
ADV ABES 2.2.3	Ensure ~~an~~ effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL

ADV ABES 2.2.4	Consider asking for help.	2		ALL
ABES 2.3	**Air / ground cooperation**			
ADV ABES 2.3.1	Collect appropriate information relevant ~~for~~ to the situation.	3		ALL
ADV ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
ABE 3	**PROCEDURES FOR ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS**			
ABES 3.1	**~~General~~ Application of procedures for ABES**			
ADV ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ALL
ABES 3.2	**Radio failure**			
ADV ABES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 *Optional content: military procedures*	ALL
ADV ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*Optional content: prolonged loss of communication*	ALL
ABES 3.3	**Unlawful interference and aircraft bomb threat**			
ADV ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
ABES 3.4	**Strayed or unidentified aircraft**			
ADV ABES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ADV ABES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
ADV ABES 3.4.3	Provide navigational assistance to aircraft.	4	*Optional content: diverted aircraft, aircraft lost or unsure of position, information derived locally or from radar service or from other pilots, nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other relevant navigational assistance, ICAO Doc 4444, etc.*	ADV ADI
ABES 3.5	**Runway incursion**			

ADV ABES 3.5.1	Apply ATC procedures associated with runway incursion.	3	ICAO Doc 4444	ADV ADI

Subject 11: AERODROMES

The ~~general~~ subject objective is:

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

AGA 1	**~~GENERAL~~ AERODROME DATA, LAYOUT AND COORDINATION**			
AGA 1.1	**Definitions**			
ADV AGA ~~1.1.1~~	~~Describe the general layout of an aerodrome with a single runway and multiple runways.~~	2	~~ICAO Annex 14~~ ~~*Optional content: AIP*~~	APP APS ADV ADI
ADV AGA 1.1.1 1.1.2	Define aerodrome data.	1	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~ *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hot spot*	ADV ADI APP APS
AGA 1.2	**Coordination**			
ADV AGA 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, Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	APP APS ADV ADI
AGA 2	**MOVEMENT AREA**			
AGA 2.1	**Movement area**			
ADV AGA 2.1.1	Describe movement area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
ADV AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	ADV ADI APP APS
ADV AGA 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
AGA 2.2	**Manoeuvring area**			

ADV AGA 2.2.1	Describe manoeuvring area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
ADV AGA 2.2.2	Describe taxiway.	2		ADV ADI APP APS
ADV AGA 2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
ADV AGA 2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS
AGA 2.3 Runways				
ADV AGA 2.3.1	Describe runway.	2	Runway, runway surface, runway strip, shoulder, runway end safety areas, clearways, stopways	ADV ADI APP APS
ADV AGA ~~2.3.2~~	~~Describe instrument runway.~~	2	~~ICAO Annex 14~~	ADV
ADV AGA 2.3.2 2.3.3	Describe non-instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV *ADI APP APS*
ADV AGA 2.3.3 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	ADV *ADI APP APS*
ADV AGA 2.3.4 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	ADV *ADI APP APS*
ADV AGA 2.3.5 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	ADV *ADI APP APS*
ADV AGA 2.3.6 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barettes*	ADV *ADI APP APS*
ADV AGA 2.3.7 2.3.8	Explain the functions of visual landing aids.	2	*Optional content: AVASI, VASI, PAPI*	ADV *ADI APP APS*

ADV AGA 2.3.8 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	ADV *ADI* *APP* *APS*
ADV AGA 2.3.9 2.3.10	Characterise the effect of water/ice on runways.	2		ADV *ADI* *APP* *APS*
ADV AGA 2.3.10 2.3.11	Explain braking action.	2	Braking action coefficient	ADV *ADI* *APP* *APS*
ADV AGA 2.3.11 2.3.12	Explain the effect of runway visual range on aerodrome operation	2		ADV *ADI* *APP* *APS*
AGA 3 OBSTACLES				
AGA 3.1 ~~General~~ Obstacle-free airspace around aerodromes				
ADV AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS
AGA 4 MISCELLANEOUS EQUIPMENT				
AGA 4.1 Location				
ADV AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	*Optional content: LLZ, GP~~LD~~, VDF, radio communication or ~~radar~~ ATS surveillance systems sensors ~~antennas~~, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

AMC1 to Appendix 4 of ANNEX I — PART-ATCO

Aerodrome Control Instrument Rating -ADI (TWR)

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.0 -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

3.3.3 - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

TABLE OF CONTENTS

Subject 1 : INTRODUCTION TO THE COURSE

The ~~general~~ subject objective is:

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

INTR 1	**COURSE MANAGEMENT**			
INTR 1.1	**Course introduction**			
ADI (TWR) INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
INTR 1.2	**Course administration**			
ADI (TWR) INTR 1.2.1	State course administration.	1		ALL
INTR 1.3	**Study material and training documentation**			
ADI (TWR) INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ADI (TWR) INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: ~~Training documentation~~, supplementary information, library*	ALL
INTR 2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
INTR 2.1	**Course content and organisation**			
ADI (TWR) INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
ADI (TWR) INTR 2.1.2	State the subjects of the course and their purpose.	1		ALL
ADI (TWR) INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ADI (TWR) INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
INTR 2.2	**Training ethos**			
ADI (TWR) INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner/instructor feedback, instructor/instructor feedback	ALL
INTR 2.3	**~~The~~ Assessment process**			
ADI (TWR) INTR 2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The ~~general~~ subject 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.

LAW 1	**ATCO LICENSING / CERTIFICATE OF COMPETENCE**			
LAW 1.1	**Privileges and conditions**			
ADI (TWR) LAW 1.1.1	Appreciate the conditions which ~~must~~ shall be met to ~~for the~~ issue an ~~of~~ Aerodrome Control Instrument rating with Tower Control endorsement.	3	~~EU Community air traffic controller licence Directive, ESARR5~~ Regulation (EU) 2015/340 on ATCO Licences, ~~rating, valid rating~~ *Optional content: national documents ~~; European Manual of Personnel Licensing - Air Traffic Controllers~~*	ADI
ADI (TWR) LAW 1.1.2 6.1.1 HUM	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ADI (TWR) LAW 1.1.3 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	~~Incident/Accident, Competence in doubt, Medical,~~ Regulation (EU) 2015/340 ATCO Licences	ALL
LAW 2	**RULES AND REGULATIONS**			
LAW 2.1	**Reports**			
ADI (TWR) LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report *Optional content: routine air reports, breach of regulations, watch/log book, records*	ALL
ADI (TWR) LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	~~ESARR 2~~, Reporting culture, air traffic incident report *Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2*	ALL
ADI (TWR) LAW 2.1.3	Use forms for reporting.	3	Regulation (EU) No 376/2014, air traffic incident reporting form(s) *Optional content: ~~ICAO Doc 4444 Appendix 4~~, routine air reports, breach of regulations, watch/log book, records*	ALL
LAW 2.2	**Airspace**			
ADI (TWR) LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Aerodrome Control Instrument rating with Tower Control endorsement operations.	3		ADI

ADI (TWR) LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*Optional content: Regulation (EU) No 923/2012, ICAO Annex 2, ICAO Annex 11, international requirements, civil requirements, military requirements, areas of responsibility, sectorization, national requirements*	ALL
ADI (TWR) LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL
LAW 3	**ATC SAFETY MANAGEMENT**			
LAW 3.1	**~~Experience~~ Feedback process**			
ADI (TWR) LAW 3.1.1 10.1.1 HUM	State the importance of ~~the~~ controller~~s~~ contribution to the ~~experience~~ feedback process.	1	*Optional content: voluntary reporting*	ALL
ADI (TWR) LAW 3.1.2 10.1.2 HUM	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, local procedures*	ALL
ADI (TWR) LAW 3.1.3 10.1.3 HUM	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards web pages*	ALL
ADI (TWR) LAW 3.1.4 10.1.4 HUM	Appreciate ~~Explain~~ the 'Just Culture' concept.	2->3	Benefits, prerequisites, constraints *Optional content: EAM 2 GUI 6, GAIN Report*	ALL
LAW 3.2	**Safety Investigation ~~Branch~~**			
ADI (TWR) LAW 3.2.1 10.2.1 HUM	Describe role and mission of Safety Investigation ~~Branch~~ in the improvement of safety.	2		ALL
ADI (TWR) LAW 3.2.2 10.2.2 HUM	Define working methods of Safety Investigation ~~Branch~~.	1		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The ~~general~~ subject objective is:

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

ATM 1	**PROVISION OF SERVICES ~~AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT~~**			
ATM 1.1	**Aerodrome control service**			
ADI (TWR) ATM 1.1.1 1.1.2	Appreciate areas of responsibility.	3	Control zone, traffic circuit, manoeuvring area, movement area, vicinity *Optional content: ATZ*	ADV ADI
ADI (TWR) ATM ~~1.1.1~~	~~Describe specific areas of responsibility of aerodrome control.~~	2	~~ICAO Annex 11~~	ADV ADI
ADI (TWR) ATM 1.1.2 1.1.3	Provide ~~the appropriate~~ aerodrome control service.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals	ADV ADI
ATM 1.2	**Flight information service (FIS)**			
ADI (TWR) ATM 1.2.1	Describe the information that shall be passed to aircraft by an aerodrome controller.	2	ICAO Doc 4444 ~~ICAO Annex 11~~	ADV ADI
ADI (TWR) ATM 1.2.2	Provide FIS.	4	ICAO Doc 4444 *Optional content: national documents*	*ALL*
ADI (TWR) ATM 1.2.3	Issue appropriate ~~traffic~~ information.	3	ICAO Doc 4444, essential local traffic, traffic information	ADV ADI
ADI (TWR) ATM 1.2.4	Appreciate the use of ATIS for the provision of flight information service by aerodrome controller.	3		ADV ADI
ATM 1.3	**Alerting service (ALRS)**			
ADI (TWR) ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444 *Optional content: national documents*	ALL
ADI (TWR) ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10, ICAO Doc 4444, *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations*	ALL
ATM 1.4	**ATS System capacity and air traffic flow management**			
ADI (TWR) ATM 1.4.1	Appreciate principles of ~~ATFCM~~ ATS system capacity and air traffic flow management.	3	*Optional content: EUROCONTROL ATFCM Users Manual ~~Working principles of ATFCM, CFMU,~~ Slot management, Slot allocation procedures*	ADV ADI

ADI (TWR) ATM 1.4.2	Organise traffic to take account of flow management.	4	*Optional content: departure sequence*	ADV ADI
ADI (TWR) ATM 1.4.3	Inform appropriate authority.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information: reported ground-based incidents, forest fire, smoke, oil pollution*	ADV ADI
ATM 2	**COMMUNICATION**			
ATM 2.1	**Effective communication**			
ADI (TWR) ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *Optional content: ICAO Doc 9432 RTF manual, standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
ADI (TWR) ATM 2.1.2	Ensure effective ~~Perform~~ communication. ~~effectively.~~	3->4	Communication techniques, readback/verification of readback	ALL
ADI (TWR) ATM ~~2.1.3~~ 6.1.2 HUM	~~Analyse examples of pilot and controller communication for effectiveness.~~	4		ALL
ATM 3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
ATM 3.1	**ATC clearances**			
ADI (TWR) ATM 3.1.1	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ADI (TWR) ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
ADI (TWR) ATM 3.1.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 3.2	**ATC instructions**			
ADI (TWR) ATM 3.2.1	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ADI (TWR) ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
ADI (TWR) ATM 3.2.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 4	**COORDINATION**			
ATM 4.1	**Necessity for coordination**			
ADI (TWR) ATM 4.1.1	Identify the need for coordination.	3		ALL

ATM 4.2	**Tools and methods for coordination**			
ADI (TWR) ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
ATM 4.3	**Coordination procedures**			
ADI (TWR) ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *Optional content: release point*	ALL
ADI (TWR) ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
ADI (TWR) ATM 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
ADI (TWR) ATM 4.3.4	Ensure the agreed course of action is carried out.	4		ALL
ADI (TWR) ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
ADI (TWR) ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
ATM 5	**ALTIMETRY AND LEVEL ALLOCATION**			
ATM 5.1	**Altimetry**			
ADI (TWR) ATM 5.1.1	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.	4	ICAO Doc 8168, ICAO Doc 4444	ALL
ADI (TWR) ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
ATM 5.2	**Terrain clearance**			
ADI (TWR) ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe height and terrain clearance.	4	*Optional content: terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	ADI
ATM 6	**SEPARATIONS**			
ATM 6.1	**Separation between departing aircraft**			

ADI (TWR) ATM 6.1.1	Provide separation between departing aircraft.	4	ICAO Doc 4444	ADV ADI
ATM 6.2	**Separation of departing aircraft from arriving aircraft**			
ADI (TWR) ATM 6.2.1	Provide separation of departing aircraft from arriving aircraft.	4	ICAO Doc 4444	ADI
ATM 6.3	**Separation of landing aircraft and preceding landing or departing aircraft**			
ADI (TWR) ATM 6.3.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	ICAO Doc 4444	*ADV* ADI
ATM 6.4	**Time-based wake turbulence longitudinal separation**			
ADI (TWR) ATM 6.4.1	Provide time-based wake turbulence longitudinal separation.	4	ICAO Doc 4444	ADI *ADV*
ATM 6.5	**Reduced separation minima**			
ADI (TWR) ATM 6.5.1	Provide reduced separation minima.	4	ICAO Doc 4444	ADI *ADV*
ATM 7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
ATM 7.1	**Airborne collision avoidance systems**			
ADI (TWR) ATM 7.1.1 7.1.6 B	Differentiate between ACAS advisory thresholds and ~~ATC~~ aerodrome separation standards.	2	ICAO Doc 9863	ADV ADI
ADI (TWR) ATM 7.1.2 7.1.4 B	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444	ALL
ADI (TWR) ATM 7.1.3 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, ~~GPWS~~ TAWS *Optional content: EUROCONTROL ACAS web page*	ALL
ATM 7.2	**Ground-based safety nets**			
ADI (TWR) ATM 7.2.1	Respond to available ground-based safety nets warnings.	3	*Optional content: anti-incursion*	ADV ADI
ATM 8	**DATA DISPLAY**			
ATM 8.1	**Data management**			
ADI (TWR) ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
ADI (TWR) ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL

ADI (TWR) ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
ADI (TWR) ATM ~~8.1.4~~	~~Process pertinent data on data displays.~~	3		ALL
ADI (TWR) ATM 8.1.4 8.1.5	Obtain flight plan information.	3	CPL, FPL, supplementary information *Optional content: RPL, AFIL, etc.*	ALL
ADI (TWR) ATM 8.1.5 8.1.6	Use flight plan information.	3		ALL
ATM 9	**OPERATIONAL ENVIRONMENT (SIMULATED)**			
ATM 9.1	**Integrity of the operational environment**			
ADI (TWR) ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: briefing, notices, local orders, verification of information*	ALL
ADI (TWR) ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: frequency, VOLMET, ATIS, SIGMET, systems set-up, integrity of displays*	ADV ADI
ATM 9.2	**Verification of the currency of operational procedures**			
ADI (TWR) ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, LOAs, NOTAM, AICs*	ALL
ATM 9.3	**Handover-takeover**			
ADI (TWR) ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
ADI (TWR) ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
ATM 10	**PROVISION OF AN AERODROME CONTROL SERVICE**			
ATM 10.1	**~~General~~ Responsibility for the provision**			
ADI (TWR) ATM 10.1.1	Explain the responsibility for the provision of an aerodrome control service.	2	ICAO Doc 4444, ICAO Annex 11	ADV ADI
ADI (TWR) ATM 10.1.2	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	*ALL*
ADI (TWR) ATM 10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ADI (TWR) ATM 10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	ADV ADI

ADI (TWR) ATM 10.1.5 3.5.1 ACFT	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*
ATM 10.2 Functions of aerodrome control tower				
ADI (TWR) ATM 10.2.1	Manage the general functions of aerodrome control.	4	ICAO Doc 4444	ADV ADI
ADI (TWR) ATM 10.2.2	Manage the suspension of VFR operations.	4	ICAO Doc 4444	ADV ADI
ATM 10.3 Traffic management process				
ADI (TWR) ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, observation, traffic projection	ADV ADI
ADI (TWR) ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		ALL
ADI (TWR) ATM 10.3.3	Identify potential solutions to achieve a safe and effective flow of aerodrome traffic.	3		ADV ADI
ADI (TWR) ATM 10.3.4	Evaluate possible outcomes of different control actions.	5		ADV ADI
ADI (TWR) ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective flow of aerodrome traffic.	5		ADV ADI
ADI (TWR) ATM 10.3.6 10.5.4	Ensure an adequate priority of actions.	4	~~Formal and situational requirements, Workload~~	*ALL*
ADI (TWR) ATM 10.3.7	Execute plan in a timely manner.	3		ADV ADI
ADI (TWR) ATM 10.3.8	Ensure a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow up	ALL
ATM 10.4 Aeronautical ground lights				
ADI (TWR) ATM 10.4.1 10.3.1	Select appropriate aeronautical ground lights.	5	ICAO Doc 4444	ADV ADI
ATM 10.5 Information to aircraft by aerodrome control tower				
ADI (TWR) ATM 10.5.1 10.4.1	Provide information related to the operation of aircraft.	4	ICAO Doc 4444	ADV ADI
ADI (TWR) ATM 10.5.2 10.4.2	Provide information on aerodrome conditions.	4	ICAO Doc 4444	ADV ADI

ATM 10.6 Control of aerodrome traffic				
ADI (TWR) ATM 10.6.1 10.5.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	ICAO Doc 4444	ADV ADI
ADI (TWR) ATM 10.6.2 10.5.2	Manage traffic on the manoeuvring area.	4	ICAO Doc 4444, aircraft, vehicles *Optional content: runway inspection*	ADV ADI
ADI (TWR) ATM 10.6.3 10.5.3	Manage traffic in accordance with procedural changes.	4	*Optional content: taxiway closure*	ADV ADI
ADI (TWR) ATM 10.6.4	Balance the workload against personal capacity.	5	*Optional content: re-planning, prioritising solutions, denying requests, delaying traffic*	ADV ADI
ADI (TWR) ATM ~~10.5.4~~ 10.3.6	~~Ensure an adequate priority of actions.~~	4	~~Formal and situational requirements, Workload~~	ADV ADI
ATM 10.7 Control of traffic in the traffic circuit				
ADI (TWR) ATM 10.7.1 10.6.1	Manage traffic in the traffic circuit.	4	ICAO Doc 4444, meteorological phenomena, geographical knowledge, environmental factors	ADV ADI
ADI (TWR) ATM 10.7.2 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
ADI (TWR) ATM 10.7.3 10.6.3	Integrate the serviceability of radio aids in the management of aerodrome traffic.	4	*Optional content: UDF, VDF, MLS, ILS, NDB, VOR, DME*	ADV ADI
ADI (TWR) ATM 10.7.4 10.6.4	Integrate surface conditions into the control of aerodrome traffic.	4	*Optional content: damp, wet, water patches, flooding, snow, slush, ice, braking action*	ADV ADI
ADI (TWR) ATM 10.7.5 10.6.5	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	*Optional content: clouds, precipitation, visibility, wind, meteorological hazards*	ADV ADI
ADI (TWR) ATM 10.7.6 10.6.6	Integrate the information provided by situation displays.	4	Use, advantages, disadvantages	ADV ADI
ADI (TWR) ATM 10.7.7	Initiate missed approach.	3	*Optional content: obstructed runway*	ADV ADI
ATM 10.8 Runway in use				
ADI (TWR) ATM 10.8.1 10.7.1	Select the runway in use.	5	ICAO Doc 4444	ADV ADI

ADI (TWR) ATM 10.8.2 10.7.2	Coordinate runway in use.	4	*Optional content: approach control, area control, runway selection, change of runway*	ADV ADI
ADI (TWR) ATM 10.8.3 10.7.3	Manage traffic in the event of runway-in-use change.	4		ADV ADI
ATM 11 PROVISION OF AERODROME CONTROL - INSTRUMENT				
ATM 11.1 ~~General~~ Low visibility operations and special VFR				
ADI (TWR) ATM 11.1.1	Manage SVFR traffic.	4	ICAO Doc 4444	ADI
ADI (TWR) ATM 11.1.2	Describe the Procedures for Low Visibility Operations.	2	ICAO Doc 4444	ADI
ATM 11.2 Departing traffic				
ADI (TWR) ATM 11.2.1	Manage control of departing aircraft.	4	ICAO Doc 4444, Use of situation displays, Wake turbulence, Appropriate departure clearances, SIDs	ADI
ADI (TWR) ATM 11.2.2	Integrate departure sequence into the control of aerodrome traffic.	4	ICAO Doc 4444	ADI
ADI (TWR) ATM 11.2.3	Provide appropriate information to departing traffic.	4	ICAO Doc 4444, use of situation displays, wake turbulence	ADI
ATM 11.3 Arriving traffic				
ADI (TWR) ATM 11.3.1	Manage control of arriving aircraft.	4	ICAO Doc 4444, wake turbulence	ADI
ADI (TWR) ATM 11.3.2	Integrate the approach sequence into the control of aerodrome traffic.	4	ICAO Doc 4444	ADI
ADI (TWR) ATM 11.3.3	Integrate aircraft on visual approach into the aerodrome traffic.	4	ICAO Doc 4444	ADI
ADI (TWR) ATM 11.3.4	Integrate aircraft on missed approach into the aerodrome traffic.	4	ICAO Doc 4444, use of air traffic monitors	ADI
ADI (TWR) ATM ~~11.3.5~~	~~Appreciate expected approach times.~~	3	~~ICAO Doc 4444~~	ADI
ADI (TWR) ATM 11.3.5 11.3.6	Integrate aircraft performing circling approach into the aerodrome traffic.	4	ICAO Doc 8168	ADI
ADI (TWR) ATM 11.3.6 11.3.7	Provide appropriate information to arriving aircraft.	4	ICAO Doc 4444	ADI
ATM 11.4 Aerodrome control service with advanced system support				

ADI (TWR) ATM 11.4.1	Appreciate the impact of advanced systems on the provision of aerodrome control service.	3	*Optional content: surface manager (SMAN), departure manager (DMAN), automated conflicts/incursions tools, alarms and resolution advisory tools, automated assistance for surface movement planning and routing, enhanced vision technology in low visibility for controllers*	ADI

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

MET 1	**METEOROLOGICAL PHENOMENA**			
MET 1.1	**Meteorological phenomena**			
ADI (TWR) MET 1.1.1	Appreciate the impact of different cloud types.	3	Cumulus, cumulonimbus *Optional content: stratus, nimbostratus, etc.*	ADV ADI
ADI (TWR) MET 1.1.2	Appreciate the impact of precipitation.	3	Precipitation and microphysics *Optional content: rain, snow, sleet, hail*	ADV ADI
ADI (TWR) MET 1.1.3	Appreciate the impact of atmospheric obscurity.	3	*Optional content: advection fog, radiation fog, mixing, evaporation, Mist, drizzle*	ADV ADI
ADI (TWR) MET 1.1.4	Appreciate the effect and impact of wind.	3	Gusting, veering, backing *Optional content: land breezes, sea breezes, Föhn*	ADV ADI
ADI (TWR) MET 1.1.5	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Wind shear, turbulence, thunderstorms, icing, microbursts	ADV ADI
ADI (TWR) MET 1.1.6	Appreciate the effect of a frontal system on aerodrome operations.	3		ADV ADI
ADI (TWR) MET 1.1.7	Integrate data about meteorological phenomena into provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena*	*ALL*
MET 2	**SOURCES OF METEOROLOGICAL DATA**			
MET 2.1	**Meteorological instruments**			
ADI (TWR) MET 2.1.1	Extract information from meteorological instruments.	3	*Optional content: anemometer, RVR indicator, cloud base indicator, ceilometer, barometer*	ADV ADI
MET 2.2	**Other sources of meteorological data**			
ADI (TWR) MET 2.2.1	Decode information from meteorological data displays.	3		ADV ADI
ADI (TWR) MET 2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3		ADV ADI
ADI (TWR) MET 2.2.3	Relay meteorological information. ~~from pilot reports.~~	3	ICAO Doc 4444 *Optional content: flight information centre, adjacent ATS unit*	*ALL*

Subject 5 : NAVIGATION

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

NAV 1	**MAPS AND AERONAUTICAL CHARTS**			
NAV 1.1	**Maps and charts**			
ADI (TWR) NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Instrument approach charts, SID charts, aerodrome charts, visual approach charts *Optional content: military maps and charts*	ADI APP APS
ADI (TWR) NAV 1.1.2	Use relevant maps and charts.	3	Instrument approach charts, SID charts, aerodrome charts, visual approach charts *Optional content: military maps and charts*	ADI
NAV 2	**INSTRUMENT~~AL~~ NAVIGATION**			
NAV 2.1	**Navigational systems**			
ADI (TWR) NAV 2.1.1	Describe the possible operational status of navigational systems.	2	*Optional content: NDB, VOR, DME, ILS, MLS, ABAS, SBAS, GBAS, RNP*	ADI
ADI (TWR) NAV 2.1.2	Decode operational status displays of navigational systems.	3	*Optional content: NDB, VOR, DME, ILS, MLS, D-GPS, RNAV, P-RNAV*	ADI
ADI (TWR) NAV 2.1.3	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*Optional content: limitations, status, degraded procedures*	*ALL*
ADI (TWR) NAV 2.1.4	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, status of ground-based systems*	ADI
NAV 2.2	**Stabilised approach**			
ADI (TWR) NAV 2.2.1	Describe the concept of stabilised approach.	2	ICAO Doc 8168 *Optional content: SKYbrary, Regulation (EC) No 1899/2006*	ADV ADI APP APS
ADI (TWR) NAV 2.2.2	Appreciate the effect of late change of runway-in-use for landing aircraft.	3		ADV ADI
NAV 2.3	**Instrument departures and arrivals**			
ADI (TWR) NAV 2.3.1	Characterise SIDs.	2		ADI APP APS
ADI (TWR) NAV 2.3.2	Describe the phases of an instrument approach procedure.	2		ADI

ADI (TWR) NAV 2.3.3	Describe the relevant minima applicable for a precision/non-precision and visual approach.	2		ADI APP APS
NAV 2.4 Satellite-based systems				
ADI (TWR) NAV 2.4.1 2.2.1	State the different applications ~~operations associated with~~ of satellite-based systems relevant for aerodrome operations.	1	*Optional content: NPA, APV-baro VNAV, APV, LPV, precision approach, ICAO Doc 8168 Vol.2*	ADI
NAV 2.5 PBN applications				
ADI (TWR) NAV 2.5.1	State future PBN developments.	1	A-RNP, APV *Optional content: RNP 3D, RNP 4D*	ADI *APP ACP APS ACS*

Subject 6 : AIRCRAFT

The ~~general~~ subject objective is:

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

ACFT 1	**AIRCRAFT INSTRUMENTS**			
ACFT 1.1	**Aircraft instruments**			
ADI (TWR) ACFT 1.1.1	Integrate ~~the~~ information ~~indication~~ from aircraft instruments provided by the pilot in the provision of ATS.	4	~~*Optional content: TCAS, wind shear indicator, weather radar*~~	ALL
ADI (TWR) ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios, ~~SELCAL~~*	ALL
ADI (TWR) ACFT 1.1.3	Explain the operation of ~~transponder~~ on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability	ADI APS ACS
ADI (TWR) ACFT ~~1.1.4~~	~~Explain the use and benefits of CPDLC.~~	2		ALL
ACFT 2	**AIRCRAFT CATEGORIES**			
ACFT 2.1	**Wake turbulence ~~categories~~**			
ADI (TWR) ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
ADI (TWR) ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
ACFT 2.2	**Application of ICAO approach categories**			
ADI (TWR) ACFT 2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168	ADI APP APS
ADI (TWR) ACFT 2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3		ADI APP APS
ACFT 3	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**			
ACFT 3.1	**Take-off factors**			
ADI (TWR) ACFT 3.1.1	Integrate the influence of factors affecting aircraft on take-off.	4	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	ADV ADI
ACFT 3.2	**Climb factors**			
ADI (TWR) ACFT 3.2.1	Appreciate the influence of factors affecting aircraft during climb.	3	*Optional content: speed, mass, air density, wind and temperature*	ADV ADI
ACFT 3.3	**Final approach and landing factors**			

ADI (TWR) ACFT 3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, runway conditions, runway slope, aerodrome elevation*	ADV ADI
ACFT 3.4 Economic factors				
ADI (TWR) ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: starting-up, taxiing, routing, departure sequence*	ADV ADI
ACFT ~~3.5~~ ~~Miscellaneous factors~~				
ADI (TWR) ACFT ~~3.5.1~~ 10.1.5 ATM	~~Appreciate the influence of operational requirements.~~	3	~~*Optional content: Military flying, Calibration flights, Aerial photography, banner towing*~~	ADV ADI
ACFT 3.5 ~~Ecological~~ Environmental factors				
ADI (TWR) ACFT 3.5.1 3.6.1	Appreciate the performance restrictions due to environmental constraints. ~~Estimate the influence of ecological factors affecting aircraft.~~	3	*Optional content: noise abatement procedures, minimum flight altitudes, bird hazard*	ADV ADI
ACFT 4 AIRCRAFT DATA				
ACFT 4.1 Recognition of aircraft types				
ADI (TWR) ACFT 4.1.1	Characterise a representative sample of aircraft which will be encountered in the operational/working environment.	2	Recognition, ICAO type designators, wake turbulence categories *Optional content: ICAO approach categories*	ADI
ACFT 4.2 Performance data				
ADI (TWR) ACFT 4.2.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of a control service.	4	Performance data under a representative variety of circumstances	ADV ADI
ADI (TWR) ACFT ~~4.2.2~~ 1.1.2 ABES	~~Identify potential or actual emergency situations.~~	3		ADV ADI

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

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

HUM 1	**PSYCHOLOGICAL FACTORS**			
HUM 1.1	**Cognitive**			
ADI (TWR) HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
ADI (TWR) HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
ADI (TWR) HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
HUM 2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
HUM 2.1	**Fatigue**			
ADI (TWR) HUM 2.1.1	State factors that cause fatigue.	1	Shift work *Optional content: night shifts and rosters*	ALL
ADI (TWR) HUM 2.1.2	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ADI (TWR) HUM 2.1.3	Recognise the onset of fatigue in self.	1	*Optional content: ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ADI (TWR) HUM 2.1.4	Recognise the onset of fatigue in others.	1		ALL
ADI (TWR) HUM 2.1.5	Describe ~~Consider~~ appropriate action when recognising fatigue.	2		ALL
HUM 2.2	**Fitness**			
ADI (TWR) HUM 2.2.1	Recognise signs of lack of personal fitness.	1		ALL
ADI (TWR) HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
HUM 3	**SOCIAL AND ORGANISATIONAL FACTORS**			
HUM 3.1	**Team resource management (TRM)**			

ADI (TWR) HUM 3.1.1	State the relevance ~~objectives~~ of TRM.	1	*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
ADI (TWR) HUM 3.1.2	State the content of the TRM concept.	1	*Optional content: team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
HUM 3.2	**Teamwork and team roles**			
ADI (TWR) HUM 3.2.1	Identify reasons for conflict.	3		ALL
ADI (TWR) HUM 3.2.2	Describe actions to prevent human conflicts.	2	*Optional content: TRM team roles*	ALL
ADI (TWR) HUM 3.2.3	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
HUM 3.3	**Responsible behaviour**			
ADI (TWR) HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
ADI (TWR) HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
HUM 4	**STRESS**			
HUM 4.1	**Stress**			
ADI (TWR) HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
HUM 4.2	**Stress management**			
ADI (TWR) HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, the benefits of active stress management	ALL
ADI (TWR) HUM 4.2.2	Respond to stressful situation by offering, asking or accepting assistance. ~~Obtain assistance in stressful situations.~~	3	*Optional content: the benefits of offering, accepting and asking for help in stressful situations*	ALL
ADI (TWR) HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, abnormal situations, CISM	ALL
ADI (TWR) HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
ADI (TWR) HUM 4.2.5	Explain procedures used following an incident/accident.	2	*Optional content: CISM, counselling, human element*	ALL
HUM 5	**HUMAN ERROR**			
HUM 5.1	**Human error**			

ADI (TWR) HUM 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 *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADI (TWR) HUM 5.1.2	Differentiate between the types of error.	2	Slips, lapses, mistakes *Optional content: ~~Slips, Lapses, Mistakes~~ ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADI (TWR) HUM 5.1.3	Describe error-prone conditions.	2	*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
ADI (TWR) HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADI (TWR) HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADI (TWR) HUM 5.1.6	Execute corrective actions.	3	Error compensation *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ADI (TWR) HUM 5.1.7	Explain the importance of error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practises*	ALL
ADI (TWR) HUM 5.1.8	Describe the impact on an ATCO following an occurrence/incident.	2	*Optional content: reporting, SMS, investigation, CISM*	ALL
HUM 5.2	**Violation of rules**			
ADI (TWR) HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
HUM ~~6~~	**~~WORKING METHODS~~**			
HUM ~~6.1~~	**~~Efficiency~~**			
ADI (TWR) HUM ~~6.1.1~~	~~Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.~~	2	~~*Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety*~~	ALL
HUM 6	**COLLABORATIVE WORK**			
HUM 6.1	**Communication**			

ADI (TWR) HUM 6.1.1 8.1.1	Use communication effectively in ATC.	3		ALL
ADI (TWR) HUM 6.1.2 2.1.3 ATM	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
HUM 6.2 Collaborative work within the same area of responsibility				
ADI (TWR) HUM 6.2.1 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ADI (TWR) HUM 6.2.2 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*Optional content: strips legibility and encoding, ~~Radar~~ labels designation, feedback*	ALL
ADI (TWR) HUM 6.2.3 8.2.3	List possible actions to provide a safe position handover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ADI (TWR) HUM 6.2.4 8.2.4	Explain consequences of a missed position handover process.	2		ALL
HUM 6.3 Collaborative work between different areas of responsibility				
ADI (TWR) HUM 6.3.1 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*Optional content: other sectors constraints, electronic coordination tools*	ALL
HUM 6.4 Controller/pilot cooperation				
ADI (TWR) HUM 6.4.1 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*Optional content: workload, mutual knowledge, controller vs pilot mental picture*	ALL
~~HUM 7 WORKING KNOWLEDGE~~				
~~HUM 7.1 Controller knowledge~~				
ADI (TWR) ~~HUM 7.1.1~~ 1.1.2 LAW	~~Explain how to maintain and update professional knowledge to retain competence in the operational environment.~~	2	~~*Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*~~	ALL
~~HUM 9 WORK ENVIRONMENT~~				
~~HUM 9.1 Ergonomics~~				
ADI (TWR) ~~HUM 9.1.1~~	~~Appreciate the impact of working position ergonomics on controller activity.~~	3		ALL
~~HUM 10 ATC SAFETY MANAGEMENT~~				
~~HUM 10.1 Experience feedback~~				

ADI (TWR) HUM ~~10.1.1~~ 3.1.1 LAW	~~State the importance of the controllers contribution to the experience feedback process.~~	1	~~*Optional content: voluntary reporting*~~	ALL
ADI (TWR) HUM ~~10.1.2~~ 3.1.2 LAW	~~Describe how reported occurrences are analysed.~~	2	~~*Optional content: ESARR2, local procedures*~~	ALL
ADI (TWR) HUM ~~10.1.3~~ 3.1.3 LAW	~~Name the means used to disseminate recommendations.~~	1	~~*Optional content: Safety letters, safety boards web pages*~~	ALL
ADI (TWR) HUM ~~10.1.4~~ 3.1.4 LAW	~~Explain the "Just Culture" concept.~~	2	benefits, prerequisites, constraints ~~*Optional content: EAM 2 GUI 6, GAIN Report*~~	ALL
HUM ~~10.2~~ ~~Safety investigation branch~~				
ADI (TWR) HUM ~~10.2.1~~ 3.2.1 LAW	~~Describe role and mission of Safety Investigation Branch in the improvement of safety.~~	2		ALL
ADI (TWR) HUM ~~10.2.2~~ 3.2.2 LAW	~~Define working methods of Safety Investigation Branch.~~	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject 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.

EQP 1	**VOICE COMMUNICATIONS**			
EQPS 1.1	**Radio communications**			
ADI (TWR) EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ADI (TWR) EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
EQPS 1.2	**Other voice communications**			
ADI (TWR) EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL
EQP 2	**AUTOMATION IN ATS**			
EQPS 2.1	**Aeronautical fixed telecommunication network (AFTN)**			
ADI (TWR) EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
EQPS 2.2	**Automatic data Interchange**			
ADI (TWR) EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	ADV ADI APS ACS
ADI (TWR) EQPS 2.2.2	Explain operational application of CPDLC for departure clearance (DCL) delivery and D-ATIS.	2	ICAO Doc 9694	ADV ADI
EQP 3	**CONTROLLER WORKING POSITION**			
EQPS 3.1	**~~General~~ Operation and monitoring of equipment**			
ADI (TWR) EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ADI (TWR) EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems ~~monitors, (CCIS)~~, UDF/VDF*	ALL
ADI (TWR) EQPS 3.1.3	Operate ~~all~~ available equipment in ~~unusual/degraded/~~abnormal and emergency situations.	3		ALL
EQPS 3.2	**Situation displays and information systems**			

ADI (TWR) EQPS 3.2.1	Use situation displays.	3		ALL
ADI (TWR) EQPS 3.2.2	Check availability of information material.	3		ALL
ADI (TWR) EQPS 3.2.3	Obtain information from equipment.	3	*Optional content: information from wind direction indicator*	ADV ADI
ADI (TWR) EQPS 3.2.4	Take account of anti-incursion equipment.	2		ADI
ADI (TWR) EQPS 3.2.5	Explain the use of ASMGCS.	2		ADI
EQPS 3.3	**Flight data systems**			
ADI (TWR) EQPS 3.3.1	Use the flight data information at controller working position.	3		ALL
EQP 4	**FUTURE EQUIPMENT**			
EQPS 4.1	**New developments**			
ADI (TWR) EQPS 4.1.1	Recognise future developments.	1	New advanced systems	ALL
EQP 5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
EQPS 5.1	**~~General~~ Reaction to limitations**			
ADI (TWR) EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
ADI (TWR) EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
EQPS 5.2	**Communication equipment degradation**			
ADI (TWR) EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground-air, ground-ground and landline communications*	ADV ADI
ADI (TWR) EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	*Optional content: total or partial degradation of ground-air, ground-ground and landline communications; alternative methods of transferring data*	ADV ADI
EQPS 5.3	**Navigational equipment degradation**			
ADI (TWR) EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: VOR, navigational aids*	ALL
ADI (TWR) EQPS 5.3.2	Apply ~~Integrate~~ contingency procedures in the event of a navigational equipment degradation.	4->3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	ADI APP ACP APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

The ~~general~~ subject objective is:

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

PEN 1	**FAMILIARISATION ~~PROFESSIONAL ENVIRONMENT~~**			
PEN 1.1	**Study visit to aerodrome**			
ADI (TWR) PEN 1.1.1	Appreciate the functions and provision of an operational aerodrome control service.	3	Study visit to TWR	ADV ADI
PEN 2	**AIRSPACE USERS**			
PEN 2.1	**Contributors to civil ATS operations**			
ADI (TWR) PEN 2.1.1 1.1.1	Characterise civil ~~and military~~ ATS activities at aerodrome.	2	Study visit to TWR *Optional content: familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC~~, Air Defence Units~~*	ADV ADI
ADI (TWR) PEN 2.1.2 1.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to ~~e.g.~~ engineering services, fire and emergency services, airline operations offices*	ALL
PEN 2.2	**Contributors to military ATS operations**			
ADI (TWR) PEN 2.2.1 1.1.1	Characterise ~~civil and~~ military ATS activities.	2	*Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
PEN 3	**CUSTOMER RELATIONS**			
PEN 3.1	**~~Customer relations~~ Provision of services and user requirements**			
ADI (TWR) PEN 3.1.1 1.2.1	Identify the role of ATC as a service provider. ~~and the requirements of the ATS users.~~	3	~~*Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*~~	ALL
ADI (TWR) PEN 3.1.2 1.2.1	Appreciate ATS users requirements.	3		ALL
PEN 4	**ENVIRONMENTAL PROTECTION**			
PEN 4.1	**Environmental protection**			
ADI (TWR) PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Circular 303 - Operational opportunities to minimise fuel use and reduce emissions*	ADV ADI APP APS

ADI (TWR) PEN 4.1.2 1.3.1	Explain the use of Collaborative Environmental Management (CEM) process at airports. ~~Describe processes used to ensure environmental protection.~~	2	~~*Optional content: night curfews, relations with local community, relations with environmental associations, relevant administrations*~~	ADV ADI APP APS
ADI (TWR) PEN 4.1.3	Appreciate the mitigation techniques used at aerodromes to minimise aviation's impact on the environment.	3	*Optional content: noise abatement procedures, flight efficiency*	ADV ADI

Subject 10: ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS

The ~~general~~ subject objective is:

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

ABE 1	**~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS (ABES)**			
ABES 1.1	**~~General~~ Overview of ABES**			
ADI (TWR) ABES 1.1.1	List common ~~unusual/degraded/~~abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure, unreliable instruments, runway incursion*	ALL
ADI (TWR) ABES 1.1.2 4.1.2 ACFT	Identify potential or actual abnormal and emergency situations.	3		ALL
ADI (TWR) ABES 1.1.3 1.1.2	Take into account the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	2	Bird strike, aborted take-off *Optional content: ICAO Doc 4444*	ADV ADI
ADI (TWR) ABES 1.1.4 1.1.3	Take into account that procedures do not ~~don't~~ exist for all ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: real life examples*	ALL
ADI (TWR) ABES 1.1.5 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL
ABE 2	**SKILLS IMPROVEMENT**			
ABES 2.1	**Communication effectiveness**			
ADI (TWR) ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, silence instruction	ALL
ADI (TWR) ABES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
ABES 2.2	**Avoidance of mental overload**			
ADI (TWR) ABES 2.2.1	Describe actions to keep ~~the~~ control of the situation.	2	*Optional content: sector splitting, holding, flow management, task delegation*	ALL
ADI (TWR) ABES 2.2.2	Organise priority of actions.	4		ALL
ADI (TWR) ABES 2.2.3	Ensure ~~an~~ effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL

ADI (TWR) ABES 2.2.4	Consider asking for help.	2		ALL
ABES 2.3	**Air / ground cooperation**			
ADI (TWR) ABES 2.3.1	Collect appropriate information relevant ~~for~~ to the situation.	3		ALL
ADI (TWR) ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
ABE 3	**PROCEDURES FOR ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS**			
ABES 3.1	**~~General~~ Application of procedures for ABES**			
ADI (TWR) ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ALL
ADI (TWR) ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	~~Runway incursion~~ *Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ADI
ABES 3.2	**Radio failure**			
ADI (TWR) ABES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 *Optional content: military procedures*	ALL
ADI (TWR) ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*Optional content: prolonged loss of communication*	ALL
ABES 3.3	**Unlawful interference and aircraft bomb threat**			
ADI (TWR) ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
ABES 3.4	**Strayed or unidentified aircraft**			
ADI (TWR) ABES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ADI (TWR) ABES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL

ADI (TWR) ABES 3.4.3	Provide navigational assistance to aircraft.	4	*Optional content: diverted aircraft, aircraft lost or unsure of position, information derived locally or from radar service or from other pilots, nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other relevant navigational assistance, ICAO Doc 4444, etc.*	ADV ADI
ABES 3.5 Runway incursion				
ADI (TWR) ABES 3.5.1	Apply ATC procedures associated with runway incursion.	3	ICAO Doc 4444	ADV ADI

Subject 11: AERODROMES

The ~~general~~ subject objective is:

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

AGA 1	**~~GENERAL~~ AERODROME DATA, LAYOUT AND COORDINATION**			
AGA 1.1	**Definitions**			
ADI (TWR) AGA ~~1.1.1~~	~~Describe the general layout of an aerodrome with a single runway and multiple runways.~~	2	~~ICAO Annex 14~~ ~~*Optional content: AIP*~~	APP APS ADV ADI
ADI (TWR) AGA 1.1.1 1.1.2	Define aerodrome data.	1	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~ *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hot spot*	ADV ADI APP APS
AGA 1.2	**Coordination**			
ADI (TWR) AGA 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, Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	APP APS ADV ADI
AGA 2	**MOVEMENT AREA**			
AGA 2.1	**Movement area**			
ADI (TWR) AGA 2.1.1	Describe movement area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
ADI (TWR) AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	ADV ADI APP APS
ADI (TWR) AGA 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
AGA 2.2	**Manoeuvring area**			

ADI (TWR) AGA 2.2.1	Describe manoeuvring area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
ADI (TWR) AGA 2.2.2	Describe taxiway.	2		ADV ADI APP APS
ADI (TWR) AGA 2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
ADI (TWR) AGA 2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS
AGA 2.3 Runways				
ADI (TWR) AGA 2.3.1	Describe runway.	2	Runway, runway surface, runway strip, shoulder, runway end safety areas, clearways, stopways	ADV ADI APP APS
ADI (TWR) AGA 2.3.2	Describe instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADI APP APS
ADI (TWR) AGA 2.3.3	Describe non-instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barettes*	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.8	Explain the functions of visual landing aids.	2	*Optional content: AVASI, VASI, PAPI*	*ADV* ADI APP APS

ADI (TWR) AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.10	Characterise the effect of water/ice on runways.	2		*ADV* ADI APP APS
ADI (TWR) AGA 2.3.11	Explain braking action.	2	Braking action coefficient	*ADV* ADI APP APS
ADI (TWR) AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation	2		*ADV* ADI APP APS
AGA 3	**OBSTACLES**			
AGA 3.1	**~~General~~ Obstacle-free airspace around aerodromes**			
ADI (TWR) AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS
AGA 4	**MISCELLANEOUS EQUIPMENT**			
AGA 4.1	**Location**			
ADI (TWR) AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	*Optional content: LLZ, GP~~LD~~, VDF, radio communication or ~~radar~~ ATS surveillance systems sensors ~~antennas~~, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

AMC1 to Appendix 5 of ANNEX I — PART-ATCO

Approach Control Procedural Rating (APP)

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.0 -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

3.3.3 - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

TABLE OF CONTENTS

Subject 1 : INTRODUCTION TO THE COURSE

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

INTR 1	**COURSE MANAGEMENT**			
INTR 1.1	**Course introduction**			
APP INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
INTR 1.2	**Course administration**			
APP INTR 1.2.1	State course administration.	1		ALL
INTR 1.3	**Study material and training documentation**			
APP INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
APP INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: ~~Training documentation~~, supplementary information, library*	ALL
INTR 2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
INTR 2.1	**Course content and organisation**			
APP INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
APP INTR 2.1.2	State the subjects of the course and their purpose.	1		ALL
APP INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
APP INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
INTR 2.2	**Training ethos**			
APP INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner/instructor feedback, instructor/instructor feedback	ALL
INTR 2.3	**~~The~~ Assessment process**			
APP INTR 2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The ~~general~~ subject 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.

LAW 1	**ATCO LICENSING / CERTIFICATE OF COMPETENCE**			
LAW 1.1	**Privileges and conditions**			
APP LAW 1.1.1	Appreciate the conditions which ~~must~~ shall be met to ~~for the~~ issue an ~~of~~ Approach Control Procedural rating	3	~~EU Community air traffic controller licence Directive, ESARR5~~ Regulation (EU) 2015/340 on ATCO Licences, ~~rating, valid rating~~ *Optional content: National documents, ~~European Manual of Personnel Licensing - Air Traffic Controllers~~*	APP
APP LAW 1.1.2 6.1.1 HUM	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
APP LAW 1.1.3 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	~~Incident/Accident, Competence in doubt, Medical,~~ Regulation (EU) 2015/340 on ATCO Licences	ALL
LAW 2	**RULES AND REGULATIONS**			
LAW 2.1	**Reports**			
APP LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report *Optional content: routine air reports, breach of regulations, watch/log book, records*	ALL
APP LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	~~ESARR 2~~, Reporting culture, air traffic incident report *Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2*	ALL
APP LAW 2.1.3	Use forms for reporting.	3	Regulation (EU) No 376/2014, air traffic incident reporting form(s) *Optional content: ~~ICAO Doc 4444 Appendix 4~~, routine air reports, breach of regulations, watch/log book, records*	ALL
LAW 2.2	**Airspace**			
APP LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Approach Control Procedural rating operations.	3		APP

APP LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*Optional content: Regulation (EU) No 923/2012, ICAO Annex 2, ICAO Annex 11, international requirements, civil requirements, military requirements, areas of responsibility, sectorization, national requirements*	ALL
APP LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL
LAW 3	**ATC SAFETY MANAGEMENT**			
LAW 3.1	**~~Experience~~ Feedback process**			
APP LAW 3.1.1 10.1.1 HUM	State the importance of ~~the~~ controller~~s~~ contribution to the ~~experience~~ feedback process.	1	*Optional content: voluntary reporting*	ALL
APP LAW 3.1.2 10.1.2 HUM	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, local procedures*	ALL
APP LAW 3.1.3 10.1.3 HUM	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards web pages*	ALL
APP LAW 3.1.4 10.1.4 HUM	Appreciate ~~Explain~~ the 'Just Culture' concept.	2->3	Benefits, prerequisites, constraints *Optional content: EAM 2 GUI 6, GAIN Report*	ALL
LAW 3.2	**Safety Investigation ~~Branch~~**			
APP LAW 3.2.1 10.2.1 HUM	Describe role and mission of Safety Investigation ~~Branch~~ in the improvement of safety.	2		ALL
APP LAW 3.2.2 10.2.2 HUM	Define working methods of Safety Investigation ~~Branch~~.	1		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The ~~general~~ subject objective is:

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

ATM 1	**PROVISION OF SERVICES ~~AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT~~**			
ATM 1.1	**Air traffic control (ATC) service**			
APP ATM 1.1.1 1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS
APP ATM 1.1.2 1.1.1	Provide ~~the appropriate~~ ~~ATC~~ approach control service.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals	APP APS
ATM 1.2	**Flight information service (FIS)**			
APP ATM 1.2.1 1.2.2	Provide FIS.	4	ICAO Doc 4444 *Optional content: national documents*	*ALL*
APP ATM 1.2.2 1.2.1	Issue ~~Relay~~ appropriate information concerning the location of ~~other~~ conflicting traffic.	3	ICAO Doc 4444, traffic information, essential traffic information	APP ACP *APS* *ACS*
APP ATM 1.2.3	Appreciate the use of ATIS for the provision of flight information service by approach controller.	3		APP *APS*
ATM 1.3	**Alerting service (ALRS)**			
APP ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444 *Optional content: national documents*	ALL
APP ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10, ICAO Doc 4444, *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations*	ALL
ATM 1.4	**ATS System capacity and air traffic flow management**			
APP ATM 1.4.1	Appreciate principles of ~~ATFM~~ ATS system capacity and air traffic flow management.	3	*Optional content: EUROCONTROL ATFCM Users Manual ~~Working principles of ATFM,~~ FABs, FUA, free flight, etc.*	APP ACP APS ACS
APP ATM 1.4.2	Apply flow management procedures in the provision of ATC.	3	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS

APP ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
APP ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
APP ATM 1.4.5	Inform supervisor of situation.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
ATM 1.5	**Airspace management (ASM)**			
APP ATM 1.5.1	Appreciate the principles and means of ASM.	3	Regulation (EC) No 551/2004, Regulation (EC) 2150/2005, Regulation (EC) No 730/2006 *Optional content: FABs, EUROCONTROL Specification for the application of FUA, ~~ICAO Doc 4444~~, ~~EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA~~, TSAs, CDRs, CBAs*	APP ACP APS ACS
APP ATM 1.5.2	Organise traffic to take account of ASM.	4	*Optional content: CDR, TSA, TRA, CBA, real-time activation, deactivation or reallocation of airspace*	APP *ACP*
ATM 2	**COMMUNICATION**			
ATM 2.1	**Effective communication**			
APP ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *Optional content: ICAO Doc 9432 RTF manual, standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
APP ATM 2.1.2	Ensure effective ~~Perform~~ communication. ~~effectively.~~	3->4	Communication techniques, readback/verification of readback	ALL
APP ATM ~~2.1.3~~ 6.1.2 HUM	~~Analyse examples of pilot and controller communication for effectiveness.~~	4		ALL
ATM 3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
ATM 3.1	**ATC clearances**			
APP ATM 3.1.1	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*	ALL

APP ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
APP ATM 3.1.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 3.2	**ATC instructions**			
APP ATM 3.2.1	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
APP ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
APP ATM 3.2.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 4	**COORDINATION**			
ATM 4.1	**Necessity for coordination**			
APP ATM 4.1.1	Identify the need for coordination.	3		ALL
ATM 4.2	**Tools and methods for coordination**			
APP ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
ATM 4.3	**Coordination procedures**			
APP ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *Optional content: release point*	ALL
APP ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
APP ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5	~~When additional traffic cannot be accepted by adjacent position/unit ; When additional traffic cannot be accepted by own position/unit, etc.~~	ALL
APP ATM 4.3.4	Ensure the agreed course of action is carried out.	4		ALL
APP ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL

APP ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL

ATM 5 ALTIMETRY AND LEVEL ALLOCATION

ATM 5.1 Altimetry

APP ATM 5.1.1	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.	4	ICAO Doc 8168, ICAO Doc 4444	ALL
APP ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL

ATM 5.2 Terrain clearance

APP ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*Optional content: terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APP ACP

ATM 6 SEPARATIONS

ATM 6.1 Vertical separation

APP ATM 6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, level allocation, during climb/descent, rate of climb/descent, holding pattern	APP APS
APP ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *Optional content: level allocation, during climb/descent, rate of climb/descent*	APP ACP APS ACS
APP ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS

ATM 6.2 Horizontal separation

APP ATM 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
APP ATM 6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030, holding	APP ACP
APP ATM 6.2.3	Provide track separation.	4		ACP APP
APP ATM 6.2.4	Provide geographical separation.	4	Visual, using navigation aids, area navigation	ACP APP

ATM 6.3 Delegation of separation

APP ATM 6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
APP ATM 6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3	ICAO Doc 4444	APP APS
APP ATM ~~6.3.3~~	~~Provide contingency separation in the event of a navigation aid failure.~~	4	~~Vertical, Standard, Emergency~~	APP *ACP*
ATM 7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
ATM 7.1	**Airborne collision avoidance systems**			
APP ATM 7.1.1 7.1.6 B	Differentiate between ACAS advisory thresholds and ~~ATC~~ separation standards applicable in the approach control environment.	2	ICAO Doc 9863 *Optional content: EUROCONTROL ACAS web page*	APP APS
APP ATM 7.1.2 7.1.4 B	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444	ALL
APP ATM 7.1.3 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, TAWS *Optional content: ~~GPWS~~ EUROCONTROL ACAS web page*	ALL
ATM 8	**DATA DISPLAY**			
ATM 8.1	**Data management**			
APP ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
APP ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
APP ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
APP ATM ~~8.1.4~~	~~Process pertinent data on data displays.~~	3		ALL
APP ATM 8.1.4 8.1.5	Obtain flight plan information.	3	CPL, FPL, supplementary information *Optional content: RPL, AFIL, etc.*	ALL
APP ATM 8.1.5 8.1.6	Use flight plan information.	3		ALL

ATM 9	**OPERATIONAL ENVIRONMENT (SIMULATED)**			
ATM 9.1	**Integrity of the operational environment**			
APP ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: briefing, notices, local orders, verification of information*	ALL
APP ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS
ATM 9.2	**Verification of the currency of operational procedures**			
APP ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, LOAs, NOTAM, AICs*	ALL
APP ATM 9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS
ATM 9.3	**Handover-takeover**			
APP ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
APP ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
ATM 10	**PROVISION OF CONTROL SERVICE**			
ATM 10.1	**Responsibility and processing of information**			
APP ATM 10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	*ALL*
APP ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
APP ATM 10.1.3 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
APP ATM 10.1.4 10.1.3	Obtain operational information.	3	ICAO Doc 4444, local operation manuals	APP ACP APS ACS
APP ATM 10.1.5 10.1.4	Interpret operational information.	5		APP ACP APS ACS
APP ATM 10.1.6 10.1.5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS

APP ATM 10.1.7 10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
APP ATM ~~10.1.7~~ 10.3.6	~~Ensure an adequate priority of actions.~~	4	~~Formal and situational requirements, workload~~	APP ACP APS ACS
APP ATM 10.1.8 3.6.1 ACFT	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	*ALL*
APP ATM ~~10.1.8~~ 10.4.2	~~Balance the workload with the traffic demand against personal capacity.~~	5	~~*e.g. in own sector, in adjacent sectors*~~	APP ACP APS ACS
ATM 10.2 Approach control				
APP ATM 10.2.1	Explain the responsibility for the provision of an approach procedural control service.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals	APP
APP ATM 10.2.2	Provide planning, coordination and control actions appropriate to the VFR, SVFR and IFR in VMC and IMC.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 4444	APP *APS*
ATM 10.3 Traffic management process				
APP ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, traffic projection	APP ACP
APP ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		ALL
APP ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
APP ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		APP ACP APS ACS
APP ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
APP ATM 10.3.6 10.1.7	Ensure an adequate priority of actions.	4	~~Formal and situational requirements, workload~~	*ALL*
APP ATM 10.3.7	Execute selected plan in a timely manner.	3		APP ACP APS ACS

APP ATM 10.3.8	Ensure a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow up	ALL
ATM 10.4 Handling traffic ~~Vectoring~~				
APP ATM 10.4.1	Manage arrivals, departures and overflights.	4		APP ACP APS ACS
APP ATM 10.4.2 10.1.8	Balance the workload ~~with the traffic demand~~ against personal capacity.	5	*Optional content: ~~in own sector, in adjacent sectors~~ re-routing, re-planning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS
APP ATM 10.4.3	Manage traffic on different types of approaches.	4	Precision, non-precision, visual	APP *APS*
APP ATM 10.4.4	Initiate missed approach.	3	ICAO Doc 4444	APP *APS*
APP ATM 10.4.5	Integrate aircraft on missed approach into the traffic situation.	4		APP *APS*
ATM 11 HOLDING				
ATM 11.1 General holding procedures				
APP ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
APP ATM 11.1.2	Appreciate the factors affecting holding patterns. ~~effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.~~	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
ATM ~~11.2~~ ~~Vertical separation~~				
APP ATM ~~11.2.1~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern.~~	4		APP ACP APS ACS
APP ATM ~~11.2.2~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern and other aircraft.~~	4		APP ACP APS ACS
ATM 11.2 Approaching aircraft				
APP ATM 11.2.1 11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3		APP APS

APP ATM 11.2.2 11.3.2	Organise the traffic landing sequence in a holding pattern.	4	*Optional content: company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management*	APP APS

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

MET 1	**METEOROLOGICAL PHENOMENA**			
MET 1.1	**Meteorological phenomena**			
APP MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, icing, clear air turbulence (CAT), turbulence, microburst, wind shear, severe mountain waves, line squalls, volcanic ash ~~*Optional content: Volcanic ash*~~	APP APS
APP MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena ~~Separation, holding, diversions, re-routings, etc.~~*	*ALL*
APP MET ~~1.1.3~~ 1.1.2	~~Integrate data about meteorological phenomena into clearances, instructions and transmitted information.~~	4	~~*Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash*~~	APP ACP APS ACS
APP MET 1.1.3 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Re-routing, level change, etc.	APP ACP APS ACS
MET 2	**SOURCES OF METEOROLOGICAL DATA**			
MET 2.1	**Sources of meteorological information**			
APP MET 2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/AIREP Special*	APP ACP APS ACS
APP MET 2.1.2	Relay meteorological information.	3	ICAO Doc 4444 ~~To: aircraft, MET office~~ *Optional content: flight information centre, adjacent ATS unit*	*ALL*

Subject 5 : NAVIGATION

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

NAV 1	**MAPS AND AERONAUTICAL CHARTS**			
NAV 1.1	**Maps and charts**			
APP NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Instrument approach charts, SID charts, aerodrome charts, visual approach charts *Optional content: military maps and charts*	ADI APP APS
APP NAV 1.1.2 1.1.1	Use relevant maps and charts.	3		APP *ACP* APS *ACS*
NAV 2	**INSTRUMENT~~AL~~ NAVIGATION**			
NAV 2.1	**Navigational systems**			
APP NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, status of ground-based and satellite-based systems*	APP ACP APS ACS
APP NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*Optional content: limitations, status, degraded procedures*	*ALL*
NAV 2.2	**Stabilised approach**			
APP NAV 2.2.1	Describe the concept of stabilised approach.	2	ICAO Doc 8168 *Optional content: SKYbrary, Regulation (EC) No 1899/2006*	ADV ADI APP APS
APP NAV 2.2.2	Appreciate the effect of late change of runway-in-use or type of approach for landing aircraft.	3		APP APS
APP NAV 2.2.3	Appreciate controller actions that may contribute to unstabilised approach.	3	Delayed descent	APP
NAV 2.3	**Instrument departures and arrivals**			
APP NAV 2.3.1	Characterise SIDs.	2		ADI APP APS
APP NAV 2.3.2	Describe the types and phases of instrument approach procedures.	2		APP APS
APP NAV 2.3.3	Describe the relevant minima applicable for a precision/non-precision and visual approach.	2		ADI APP APS
NAV 2.4	**Navigational assistance**			

APP NAV 2.4.1 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	APP *ACP* APS *ACS*
NAV 2.5	**Satellite-based systems**			
APP NAV 2.5.1 2.3.1	State the different applications ~~operations associated with~~ of satellite-based systems relevant for approach operations.	1	*Optional content: NPA, APV-baro VNAV, APV, LPV, precision approach, ICAO Doc 8168 Vol.2*	APP APS
NAV 2.6	**PBN applications**			
APP NAV 2.6.1	State the navigation applications used in approach and terminal environments.	1	Approach-RNP APCH/ RNP AR APCH; Terminal-RNAV-1 (≈P-RNAV) *Optional content: A-RNP, EU PBN Implementing Rule, ICAO Doc 9613*	APP APS
APP NAV 2.6.2	Explain the principles and designation of navigation specifications in use.	2	*Optional content: performance, functionality, sensors, aircrew and controller requirements*	APP *ACP* APS *ACS*
APP NAV 2.6.3	State future PBN developments.	1	A-RNP, APV *Optional content: RNP 3D, RNP 4D*	*ADI* APP *ACP* APS *ACS*

Subject 6 : AIRCRAFT

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

ACFT 1	**AIRCRAFT INSTRUMENTS**			
ACFT 1.1	**Aircraft instruments**			
APP ACFT 1.1.1	Integrate ~~the~~ information ~~indication~~ from aircraft instruments provided by the pilot in the provision of ATS.	4	~~*Optional content: TCAS, wind shear indicator, weather radar*~~	ALL
APP ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios, ~~SELCAL~~*	ALL
APP ACFT 1.1.3	~~Explain the operation of transponder equipment.~~	2	~~Transponders: equipment Mode A, Mode C, Mode S~~	ADV APP ACP
APP ACFT ~~1.1.4~~	~~Explain the use and benefits of CPDLC.~~	2		ALL
ACFT 2	**AIRCRAFT CATEGORIES**			
ACFT 2.1	**Wake turbulence ~~categories~~**			
APP ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
APP ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
ACFT 2.2	**Application of ICAO approach categories**			
APP ACFT 2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168	ADI APP APS
APP ACFT 2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3		ADI APP APS
ACFT 3	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**			
ACFT 3.1	**Climb factors**			
APP ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
APP ACFT 3.1.2	Appreciate the influence of factors affecting aircraft on take-off.	3	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	APP APS
ACFT 3.2	**Cruise factors**			

APP ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
ACFT 3.3	**Descent and initial approach factors**			
APP ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, aircraft configuration, cabin pressurisation*	APP APS
ACFT 3.4	**Final approach and landing factors**			
APP ACFT 3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, meteorological conditions, runway conditions, runway slope, aerodrome elevation*	APP APS
ACFT 3.5	**Economic factors**			
APP ACFT 3.5.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile*	APP APS
APP ACFT 3.5.2	Use continuous climb techniques where applicable.	3		APP *ACP* APS *ACS*
APP ACFT 3.5.3	Use direct routing where applicable.	3		APP *ACP* APS *ACS*
ACFT ~~3.6~~	**~~Miscellaneous Factors~~**			
APP ACFT ~~3.6.1~~ 10.1.8 ATM	~~Appreciate the influence of operational requirements.~~	3	~~*Optional content: Military flying, Calibration flights, Aerial photography, banner towing*~~	APP APS
ACFT 3.6	**~~Ecological~~ Environmental factors**			
APP ACFT 3.6.1 3.7.1	Appreciate the performance restrictions due to environmental constraints. ~~Estimate the influence of ecological factors affecting aircraft.~~	3	*Optional content: fuel dumping, noise abatement procedures, minimum flight levels, bird hazard, continuous descent operations ~~Approach~~*	APP APS
ACFT 4	**AIRCRAFT DATA**			
ACFT 4.1	**Performance data**			
APP ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
APP ACFT ~~4.1.2~~ 1.1.2 ABES	~~Identify potential or actual emergency situations.~~	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

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

HUM 1	**PSYCHOLOGICAL FACTORS**			
HUM 1.1	**Cognitive**			
APP HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
APP HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
APP HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
HUM 2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
HUM 2.1	**Fatigue**			
APP HUM 2.1.1	State factors that cause fatigue.	1	Shift work *Optional content: night shifts and rosters*	ALL
APP HUM 2.1.2	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
APP HUM 2.1.3	Recognise the onset of fatigue in self.	1	*Optional content: ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
APP HUM 2.1.4	Recognise the onset of fatigue in others.	1		ALL
APP HUM 2.1.5	Describe ~~Consider~~ appropriate action when recognising fatigue.	2		ALL
HUM 2.2	**Fitness**			
APP HUM 2.2.1	Recognise signs of lack of personal fitness.	1		ALL
APP HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
HUM 3	**SOCIAL AND ORGANISATIONAL FACTORS**			
HUM 3.1	**Team resource management (TRM)**			

APP HUM 3.1.1	State the relevance ~~objectives~~ of TRM.	1	*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
APP HUM 3.1.2	State the content of the TRM concept.	1	*Optional content: team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
HUM 3.2	**Teamwork and team roles**			
APP HUM 3.2.1	Identify reasons for conflict.	3		ALL
APP HUM 3.2.2	Describe actions to prevent human conflicts.	2	*Optional content: TRM team roles*	ALL
APP HUM 3.2.3	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
HUM 3.3	**Responsible behaviour**			
APP HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
APP HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
HUM 4	**STRESS**			
HUM 4.1	**Stress**			
APP HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
HUM 4.2	**Stress management**			
APP HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, the benefits of active stress management	ALL
APP HUM 4.2.2	Respond to stressful situation by offering, asking or accepting assistance. ~~Obtain assistance in stressful situations.~~	3	*Optional content: the benefits of offering, accepting and asking for help in stressful situations*	ALL
APP HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, abnormal situations, CISM	ALL
APP HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
APP HUM 4.2.5	Explain procedures used following an incident/accident.	2	*Optional content: CISM, counselling, human element*	ALL

HUM 5	**HUM 5 HUMAN ERROR**			
HUM 5.1	**HUM 5.1 Human error**			
APP HUM 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 *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 5.1.2	Differentiate between the types of error.	2	Slips, lapses, mistakes *Optional content: ~~Slips, Lapses, Mistakes~~ ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 5.1.3	Describe error-prone conditions.	2	*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
APP HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 5.1.6	Execute corrective actions.	3	Error compensation *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APP HUM 5.1.7	Explain the importance of error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practises*	ALL
APP HUM 5.1.8	Describe the impact on an ATCO following an occurrence/incident.	2	*Optional content: reporting, SMS, investigation, CISM*	ALL
HUM 5.2	**HUM 5.2 Violation of rules**			
APP HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
HUM ~~6~~	**HUM ~~6~~ ~~WORKING METHODS~~**			
HUM ~~6.1~~	**HUM ~~6.1~~ ~~Efficiency~~**			
APP HUM ~~6.1.1~~	~~Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.~~	2	~~*Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety*~~	ALL
HUM 6	**HUM 6 COLLABORATIVE WORK**			

HUM 6.1	**Communication**			
APP HUM 6.1.1 8.1.1	Use communication effectively in ATC.	3		ALL
APP HUM 6.1.2 2.1.3 ATM	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
HUM 6.2	**Collaborative work within the same area of responsibility**			
APP HUM 6.2.1 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
APP HUM 6.2.2 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*Optional content: strips legibility and encoding, ~~Radar~~ labels designation, feedback*	ALL
APP HUM 6.2.3 8.2.3	List possible actions to provide a safe position handover.	1	*Optional content: rigour, preparation, overlap time*	ALL
APP HUM 6.2.4 8.2.4	Explain consequences of a missed position handover process.	2		ALL
HUM 6.3	**Collaborative work between different areas of responsibility**			
APP HUM 6.3.1 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*Optional content: other sectors constraints, electronic coordination tools*	ALL
HUM 6.4	**Controller/pilot cooperation**			
APP HUM 6.4.1 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*Optional content: workload, mutual knowledge, controller vs pilot mental picture*	ALL
~~HUM 7~~	**~~WORKING KNOWLEDGE~~**			
~~HUM 7.1~~	**~~Controller knowledge~~**			
APP HUM ~~7.1.1~~ 1.1.2 LAW	~~Explain how to maintain and update professional knowledge to retain competence in the operational environment.~~	2	~~*Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*~~	ALL
~~HUM 9~~	**~~WORK ENVIRONMENT~~**			
~~HUM 9.1~~	**~~Ergonomics~~**			
APP HUM ~~9.1.1~~	~~Appreciate the impact of working position ergonomics on controller activity.~~	3		ALL
~~HUM 10~~	**~~ATC SAFETY MANAGEMENT~~**			

HUM ~~10.1~~ ~~Experience feedback~~				
APP HUM ~~10.1.1~~ 3.1.1 LAW	~~State the importance of the controllers contribution to the experience feedback process.~~	1	~~*Optional content: voluntary reporting*~~	ALL
APP HUM ~~10.1.2~~ 3.1.2 LAW	~~Describe how reported occurrences are analysed.~~	2	~~*Optional content: ESARR2, local procedures*~~	ALL
APP HUM ~~10.1.3~~ 3.1.3 LAW	~~Name the means used to disseminate recommendations.~~	1	~~*Optional content: Safety letters, safety boards web pages*~~	ALL
APP HUM ~~10.1.4~~ 3.1.4 LAW	~~Explain the "Just Culture" concept.~~	2	~~benefits, prerequisites, constraints~~ ~~*Optional content: EAM 2 GUI 6, GAIN Report*~~	ALL
HUM ~~10.2~~ ~~Safety investigation branch~~				
APP HUM ~~10.2.1~~ 3.2.1 LAW	~~Describe role and mission of Safety Investigation Branch in the improvement of safety.~~	2		ALL
APP HUM ~~10.2.2~~ 3.2.2 LAW	~~Define working methods of Safety Investigation Branch.~~	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject 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.

EQPS 1	**VOICE COMMUNICATIONS**			
EQPS 1.1	**Radio communications**			
APP EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
APP EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
APP EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
EQPS 1.2	**Other voice communications**			
APP EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL
EQPS 2	**AUTOMATION IN ATS**			
EQPS 2.1	**Aeronautical fixed telecommunication network (AFTN)**			
APP EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
EQPS 2.2	**Automatic data Interchange**			
APP EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: ~~Sequencing systems,~~ automated information and coordination, OLDI*	APP ACP
EQPS 3	**CONTROLLER WORKING POSITION**			
EQPS 3.1	**~~General~~ Operation and monitoring of equipment**			
APP EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
APP EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems ~~monitors, (CCIS)~~, UDF/VDF*	ALL
APP EQPS 3.1.3	Operate ~~all~~ available equipment in ~~unusual/degraded/~~abnormal and emergency situations.	3		ALL
EQPS 3.2	**Situation displays and information systems**			

APP EQPS 3.2.1	Use situation displays.	3		ALL
APP EQPS 3.2.2	Check availability of information material.	3		ALL
APP EQPS 3.2.3	Obtain ~~the~~ information from equipment.	3		APP ACP APS ACS
EQPS 3.3	**Flight data systems**			
APP EQPS 3.3.1	Use the flight data information at controller working position.	3		ALL
EQPS 4	**FUTURE EQUIPMENT**			
EQPS 4.1	**New developments**			
APP EQPS 4.1.1	Recognise future developments.	1	New advanced systems	ALL
EQPS 5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
EQPS 5.1	**~~General~~ Reaction to limitations**			
APP EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
APP EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
EQPS 5.2	**Communication equipment degradation**			
APP EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground-air and landline communications*	APP ACP APS ACS
APP EQPS 5.2.2	Apply ~~Integrate~~ contingency procedures in the event of communication equipment degradation.	4->3	Procedures for total or partial degradation of ground-air and landline communications, alternative methods of transferring data	APP ACP APS ACS
EQPS 5.3	**Navigational equipment degradation**			
APP EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: VOR, navigational aids*	ALL
APP EQPS 5.3.2	Apply ~~Integrate~~ contingency procedures in the event of a navigational equipment degradation.	4->3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	ADI APP ACP APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

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

PEN 1	**FAMILIARISATION ~~PROFESSIONAL ENVIRONMENT~~**			
PEN 1.1	**Study visit to approach control unit**			
APP PEN 1.1.1	Appreciate the functions and provision of an operational approach control service.	3	Study visit to an approach control unit	APP APS
PEN 2	**AIRSPACE USERS**			
PEN 2.1	**Contributors to civil ATS operations**			
APP PEN 2.1.1 1.1.1	Characterise civil ~~and military~~ ATS activities in approach control unit.	2	Study visit to an approach control unit *Optional content: Familiarisation visits to ~~e.g.~~ TWR, ~~APP,~~ ACC, AIS, RCC~~, Air Defence Units~~*	APP APS
APP PEN 2.1.2 1.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to ~~e.g.~~ engineering services, fire and emergency services, airline operations offices*	ALL
PEN 2.2	**Contributors to military ATS operations**			
APP PEN 2.2.1 1.1.1	Characterise ~~civil and~~ military ATS activities.	2	*Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
PEN 3	**CUSTOMER RELATIONS**			
PEN 3.1	**~~Customer relations~~ Provision of services and user requirements**			
APP PEN 3.1.1 1.2.1	Identify the role of ATC as a service provider. ~~and the requirements of the ATS users.~~	3	~~*Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*~~	ALL
APP PEN 3.1.2 1.2.1	Appreciate ATS users requirements.	3		ALL
PEN 4	**ENVIRONMENTAL PROTECTION**			
PEN 4.1	**Environmental protection**			
APP PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Circular 303 - Operational opportunities to minimise fuel use and reduce emissions*	ADV ADI APP APS

APP PEN 4.1.2 1.3.1	Explain the use of Collaborative Environmental Management (CEM) process at airports. ~~Describe processes used to ensure environmental protection.~~	2	~~*Optional content: night curfews, relations with local community, relations with environmental associations, relevant administrations*~~	ADV ADI APP APS
APP PEN 4.1.3	Appreciate the mitigation techniques used to minimise aviation's impact on the environment.	3	*Optional content: continuous descent operations (CDO), noise abatement procedures, noise preferential routes, flight efficiency*	APP APS

Subject 10: ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS

The ~~general~~ subject objective is:

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

ABES 1	**~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS (ABES)**			
ABES 1.1	**~~General~~ Overview of ABES**			
APP ABES 1.1.1	List common ~~unusual/degraded/~~abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure, unreliable instruments, runway incursion*	ALL
APP ABES 1.1.2 4.1.2 ACFT	Identify potential or actual abnormal and emergency situations.	3		ALL
APP ABES 1.1.3 1.1.2	Take into account the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
APP ABES 1.1.4 1.1.3	Take into account that procedures do not ~~don't~~ exist for all ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: real life examples*	ALL
APP ABES 1.1.5 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL
ABES 2	**SKILLS IMPROVEMENT**			
ABES 2.1	**Communication effectiveness**			
APP ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, silence instruction	ALL
APP ABES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
ABES 2.2	**Avoidance of mental overload**			
APP ABES 2.2.1	Describe actions to keep ~~the~~ control of the situation.	2	*Optional content: sector splitting, holding, flow management, task delegation*	ALL
APP ABES 2.2.2	Organise priority of actions.	4		ALL
APP ABES 2.2.3	Ensure ~~an~~ effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL

APP ABES 2.2.4	Consider asking for help.	2		ALL
ABES 2.3	**Air / ground cooperation**			
APP ABES 2.3.1	Collect appropriate information relevant ~~for~~ to the situation.	3		ALL
APP ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
ABES 3	**PROCEDURES FOR ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS**			
ABES 3.1	**~~General~~ Application of procedures for ABES**			
APP ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ALL
ABES 3.2	**Radio failure**			
APP ABES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 *Optional content: military procedures*	ALL
APP ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*Optional content: prolonged loss of communication*	ALL
ABES 3.3	**Unlawful interference and aircraft bomb threat**			
APP ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
ABES 3.4	**Strayed or unidentified aircraft**			
APP ABES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
APP ABES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
ABES 3.5	**Diversions**			
APP ABES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS

Subject 11: AERODROMES

The ~~general~~ subject objective is:

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

AGA 1	**~~GENERAL~~ AERODROME DATA, LAYOUT AND COORDINATION**			
AGA 1.1	**Definitions**			
APP AGA ~~1.1.1~~	~~Describe the general layout of an aerodrome with a single runway and multiple runways.~~	2	~~ICAO Annex 14~~ ~~*Optional content: AIP*~~	APP APS ADV ADI
APP AGA 1.1.1 1.1.2	Define aerodrome data.	1	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~ *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hot spot*	ADV ADI APP APS
AGA 1.2	**Coordination**			
APP AGA 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, Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	APP APS ADV ADI
AGA 2	**MOVEMENT AREA**			
AGA 2.1	**Movement area**			
APP AGA 2.1.1	Describe movement area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
APP AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	ADV ADI APP APS
APP AGA 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
AGA 2.2	**Manoeuvring area**			

APP AGA 2.2.1	Describe manoeuvring area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
APP AGA 2.2.2	Describe taxiway.	2		ADV ADI APP APS
APP AGA 2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
APP AGA 2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS
AGA 2.3 Runways				
APP AGA 2.3.1	Describe runway.	2	Runway, runway surface, runway strip, shoulder, runway end safety areas, clearways, stopways	ADV ADI APP APS
APP AGA 2.3.2	Describe instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADI APP APS
APP AGA 2.3.3	Describe non-instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	*ADV* ADI APP APS
APP AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	*ADV* ADI APP APS
APP AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	*ADV* ADI APP APS
APP AGA 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	*ADV* ADI APP APS
APP AGA 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barettes*	*ADV* ADI APP APS
APP AGA 2.3.8	Explain the functions of visual landing aids.	2	*Optional content: AVASI, VASI, PAPI*	*ADV* ADI APP APS

APP AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	*ADV* ADI APP APS
APP AGA 2.3.10	Characterise the effect of water/ice on runways.	2		*ADV* ADI APP APS
APP AGA 2.3.11	Explain braking action.	2	Braking action coefficient	*ADV* ADI APP APS
APP AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation	2		*ADV* ADI APP APS
AGA 3	**OBSTACLES**			
AGA 3.1	**~~General~~ Obstacle-free airspace around aerodromes**			
APP AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2		ADV ADI APP APS
AGA 4	**MISCELLANEOUS EQUIPMENT**			
AGA 4.1	**Location**			
APP AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	*Optional content: LLZ, GP~~LD~~, VDF, radio communication or ~~radar~~ ATS surveillance systems sensors ~~antennas~~, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

AMC1 to Appendix 6 of ANNEX I — PART-ATCO

Area Control Procedural Rating (ACP)

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.0 -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

3.3.3 - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

TABLE OF CONTENTS

Subject 1 : INTRODUCTION TO THE COURSE

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

INTR 1	**COURSE MANAGEMENT**			
INTR 1.1	**Course introduction**			
ACP INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
INTR 1.2	**Course administration**			
ACP INTR 1.2.1	State course administration.	1		ALL
INTR 1.3	**Study material and training documentation**			
ACP INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ACP INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: ~~Training documentation~~, supplementary information, library*	ALL
INTR 2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
INTR 2.1	**Course content and organisation**			
ACP INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
ACP INTR 2.1.2	State the subjects of the course and their purpose.	1		ALL
ACP INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ACP INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
INTR 2.2	**Training ethos**			
ACP INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner/instructor feedback, instructor/instructor feedback	ALL
INTR 2.3	**~~The~~ Assessment process**			
ACP INTR 2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The ~~general~~ subject 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.

LAW 1	**ATCO LICENSING / CERTIFICATE OF COMPETENCE**			
LAW 1.1	**Privileges and conditions**			
ACP LAW 1.1.1	Appreciate the conditions which ~~must~~ shall be met to ~~for the~~ issue an ~~of~~ Area Control Procedural rating.	3	~~EU Community air traffic controller licence Directive, ESARR5~~ Regulation (EU) 2015/340 on ATCO Licences, ~~rating, valid rating~~ *Optional content: National documents, ~~European Manual of Personnel Licensing - Air Traffic Controllers~~*	ACP
ACP LAW 1.1.2 6.1.1 HUM	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ACP LAW 1.1.3 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	~~Incident/Accident, Competence in doubt, Medical,~~ Regulation (EU) 2015/340 on ATCO Licences	ALL
LAW 2	**RULES AND REGULATIONS**			
LAW 2.1	**Reports**			
ACP LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report *Optional content: routine air reports, breach of regulations, watch/log book, records*	ALL
ACP LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	~~ESARR 2~~, Reporting culture, air traffic incident report *Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2*	ALL
ACP LAW 2.1.3	Use forms for reporting.	3	Regulation (EU) No 376/2014, air traffic incident reporting form(s) *Optional content: ~~ICAO Doc 4444 Appendix 4~~, routine air reports, breach of regulations, watch/log book, records*	ALL
LAW 2.2	**Airspace**			
ACP LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Area Control Procedural rating operations.	3		ACP

ACP LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*Optional content: Regulation (EU) No 923/2012, ICAO Annex 2, ICAO Annex 11, international requirements, civil requirements, military requirements, areas of responsibility, sectorization, national requirements*	ALL
ACP LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL
LAW 3 ATC SAFETY MANAGEMENT				
LAW 3.1 ~~Experience~~ Feedback process				
ACP LAW 3.1.1 10.1.1 HUM	State the importance of ~~the~~ controller~~s~~ contribution to the ~~experience~~ feedback process.	1	*Optional content: voluntary reporting*	ALL
ACP LAW 3.1.2 10.1.2 HUM	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, local procedures*	ALL
ACP LAW 3.1.3 10.1.3 HUM	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards web pages*	ALL
ACP LAW 3.1.4 10.1.4 HUM	Appreciate ~~Explain~~ the 'Just Culture' concept.	2->3	Benefits, prerequisites, constraints *Optional content: EAM 2 GUI 6, GAIN Report*	ALL
LAW 3.2 Safety Investigation ~~Branch~~				
ACP LAW 3.2.1 10.2.1 HUM	Describe role and mission of Safety Investigation ~~Branch~~ in the improvement of safety.	2		ALL
ACP LAW 3.2.2 10.2.2 HUM	Define working methods of Safety Investigation ~~Branch~~.	1		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

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

ATM 1	**PROVISION OF SERVICES ~~AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT~~**			
ATM 1.1	**Air traffic control (ATC) service**			
ACP ATM 1.1.1 1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS
ACP ATM 1.1.2 1.1.1	Provide ~~the appropriate~~ ~~ATC~~ area control service.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals	ACP ACS
ATM 1.2	**Flight information service (FIS)**			
ACP ATM 1.2.1 1.2.2	Provide FIS.	4	ICAO Doc 4444 *Optional content: national documents*	*ALL*
ACP ATM 1.2.2 1.2.1	Issue ~~Relay~~ appropriate information concerning the location of ~~other~~ conflicting traffic.	3	ICAO Doc 4444, traffic information, essential traffic information	APP ACP *APS ACS*
ATM 1.3	**Alerting service (ALRS)**			
ACP ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444 *Optional content: national documents*	ALL
ACP ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10, ICAO Doc 4444, *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations*	ALL
ATM 1.4	**ATS System capacity and air traffic flow management**			
ACP ATM 1.4.1	Appreciate principles of ~~ATFM~~ ATS system capacity and air traffic flow management.	3	*Optional content: EUROCONTROL ATFCM Users Manual ~~Working principles of ATFM;~~ FABs, FUA, free flight, etc.*	APP ACP APS ACS
ACP ATM 1.4.2	Apply flow management procedures in the provision of ATC.	3	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
ACP ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
ACP ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS

ACP ATM 1.4.5	Inform supervisor of situation.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
ATM 1.5	**Airspace management (ASM)**			
ACP ATM 1.5.1	Appreciate the principles and means of ASM.	3	Regulation (EC) No 551/2004, Regulation (EC) 2150/2005, Regulation (EC) No 730/2006 *Optional content: FABs, EUROCONTROL Specification for the application of FUA, ~~ICAO Doc 4444~~, ~~EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA,~~ TSAs, CDRs, CBAs*	APP ACP APS ACS
ACP ATM 1.5.2	Organise traffic to take account of ASM.	4	*Optional content: CDR, TSA, TRA,CBA, real-time activation, deactivation or reallocation of airspace*	*APP* ACP
ATM 2	**COMMUNICATION**			
ATM 2.1	**Effective communication**			
ACP ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *Optional content: ICAO Doc 9432 RTF manual, standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
ACP ATM 2.1.2	Ensure effective ~~Perform~~ communication. ~~effectively.~~	3->4	Communication techniques, readback/verification of readback	ALL
ACP ATM ~~2.1.3~~ 6.1.2 HUM	~~Analyse examples of pilot and controller communication for effectiveness.~~	4		ALL
ATM 3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			
ATM 3.1	**ATC clearances**			
ACP ATM 3.1.1	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ACP ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
ACP ATM 3.1.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 3.2	**ATC instructions**			
ACP ATM 3.2.1	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ACP ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL

ACP ATM 3.2.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 4	**COORDINATION**			
ATM 4.1	**Necessity for coordination**			
ACP ATM 4.1.1	Identify the need for coordination.	3		ALL
ATM 4.2	**Tools and methods for coordination**			
ACP ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
ATM 4.3	**Coordination procedures**			
ACP ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *Optional content: release point*	ALL
ACP ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
ACP ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5	~~When additional traffic cannot be accepted by adjacent position/unit ; When additional traffic cannot be accepted by own position/unit, etc.~~	ALL
ACP ATM 4.3.4	Ensure the agreed course of action is carried out.	4		ALL
ACP ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
ACP ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
ATM 5	**ALTIMETRY AND LEVEL ALLOCATION**			
ATM 5.1	**Altimetry**			
ACP ATM 5.1.1	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.	4	ICAO Doc 8168, ICAO Doc 4444	ALL
ACP ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
ATM 5.2	**Terrain clearance**			

ACP ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*Optional content: terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APP ACP
ATM 6	**SEPARATIONS**			
ATM 6.1	**Vertical separation**			
ACP ATM 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, holding pattern	ACP ACS
ACP ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *Optional content: level allocation, during climb/descent, rate of climb/descent*	APP ACP APS ACS
ACP ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
ATM 6.2	**Horizontal separation**			
ACP ATM 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~~ *Optional content: based on time with Mach number technique*	ACP
ACP ATM 6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030, holding	APP ACP
ACP ATM 6.2.3	Provide track separation.	4		ACP APP
ACP ATM 6.2.4	Provide geographical separation.	4	Visual, using navigation aids, area navigation	ACP APP
ATM ~~6.3~~	**~~Delegation of separation~~**			
ACP ATM ~~6.3.1~~	~~Provide contingency separation in the event of a navigation aid failure.~~	4	~~Vertical, Standard, Emergency~~	*APP* ACP
ATM 7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
ATM 7.1	**Airborne collision avoidance systems**			
ACP ATM 7.1.1 7.1.6 B	Differentiate between ACAS advisory thresholds and ~~ATC~~ separation standards applicable in the area control environment.	2	ICAO Doc 9863 *Optional content: EUROCONTROL ACAS web page*	ACP ACS

ACP ATM 7.1.2 7.1.4 B	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444	ALL
ACP ATM 7.1.3 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, TAWS *Optional content: ~~GPWS~~ EUROCONTROL ACAS web page*	ALL
ATM 8 DATA DISPLAY				
ATM 8.1 Data management				
ACP ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	*Optional content: information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs*	ALL
ACP ATM 8.1.2	Analyse pertinent data on data displays.	4		ALL
ACP ATM 8.1.3	Organise pertinent data on data displays.	4		ALL
ACP ATM ~~8.1.4~~	~~Process pertinent data on data displays.~~	3		ALL
ACP ATM 8.1.4 8.1.5	Obtain flight plan information.	3	CPL, FPL, supplementary information *Optional content: RPL, AFIL, etc.*	ALL
ACP ATM 8.1.5 8.1.6	Use flight plan information.	3		ALL
ATM 9 OPERATIONAL ENVIRONMENT (SIMULATED)				
ATM 9.1 Integrity of the operational environment				
ACP ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: briefing, notices, local orders, verification of information*	ALL
ACP ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS
ATM 9.2 Verification of the currency of operational procedures				
ACP ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, LOAs, NOTAM, AICs*	ALL
ACP ATM 9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS
ATM 9.3 Handover-takeover				

ACP ATM 9.3.1	Transfer information to the relieving controller.	3		ALL
ACP ATM 9.3.2	Obtain information from the controller handing over.	3		ALL
ATM 10 PROVISION OF CONTROL SERVICE				
ATM 10.1 Responsibility and processing of information				
ACP ATM 10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	*ALL*
ACP ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ACP ATM 10.1.3 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
ACP ATM 10.1.4 10.1.3	Obtain operational information.	3	ICAO Doc 4444, local operation manuals	APP ACP APS ACS
ACP ATM 10.1.5 10.1.4	Interpret operational information.	5		APP ACP APS ACS
ACP ATM 10.1.6 10.1.5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
ACP ATM 10.1.7 10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
ACP ATM ~~10.1.7~~ 10.3.6	~~Ensure an adequate priority of actions.~~	4	~~Formal and situational requirements, workload~~	APP ACP APS ACS
ACP ATM 10.1.8 3.5.1 ACFT	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, Aerial photography*	ALL
ACP ATM ~~10.1.8~~ 10.4.2	~~Balance the workload with the traffic demand against personal capacity.~~	5	~~*e.g. in own sector, in adjacent sectors*~~	APP ACP APS ACS
ATM 10.2 Area control				
ACP ATM 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

ACP ATM 10.2.2	Provide planning, coordination and control actions appropriate to the VFR and IFR in VMC and IMC.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 2,~~ ICAO Annex 11, ICAO Doc 4444	ACP *ACS*
ATM 10.3 Traffic management process				
ACP ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, traffic projection	APP ACP
ACP ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		ALL
ACP ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
ACP ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		APP ACP APS ACS
ACP ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
ACP ATM 10.3.6 10.1.7	Ensure an adequate priority of actions.	4	~~Formal and situational requirements, workload~~	*ALL*
ACP ATM 10.3.7	Execute selected plan in a timely manner.	3		APP ACP APS ACS
ACP ATM 10.3.8	Ensure a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow up	ALL
ATM 10.4 Handling traffic ~~Vectoring~~				
ACP ATM 10.4.1	Manage arrivals, departures and overflights.	4		APP ACP APS ACS
ACP ATM 10.4.2 10.1.8	Balance the workload ~~with the traffic demand~~ against personal capacity.	5	*Optional content: ~~in own sector, in adjacent sectors~~ re-routing, re-planning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS
ATM 11 HOLDING				
ATM 11.1 General holding procedures				
ACP ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
ACP ATM 11.1.2	Appreciate the factors affecting holding patterns. ~~effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.~~	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS

ATM ~~11.2~~ ~~Vertical separation~~			
ACP ATM ~~11.2.1~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern.~~	4	APP ACP APS ACS
ACP ATM ~~11.2.2~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern and other aircraft.~~	4	APP ACP APS ACS
ATM 11.2 Holding aircraft			
ACP ATM 11.2.1 11.3.1	Calculate expected onward clearance times.	3	ACP ACS

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

MET 1	**METEOROLOGICAL PHENOMENA**			
MET 1.1	**Meteorological phenomena**			
ACP MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, icing, jet streams, clear air turbulence (CAT), turbulence, microburst, severe mountain waves, line squalls, volcanic ash *Optional content: ~~Volcanic ash~~ solar radiation*	ACP ACS
ACP MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena ~~Separation, holding, diversions, re-routings, etc.~~*	*ALL*
ACP MET ~~1.1.3~~ 1.1.2	~~Integrate data about meteorological phenomena into clearances, instructions and transmitted information.~~	4	~~*Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash*~~	APP ACP APS ACS
ACP MET 1.1.3 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Re-routing, level change, etc.	APP ACP APS ACS
MET 2	**SOURCES OF METEOROLOGICAL DATA**			
MET 2.1	**Sources of meteorological information**			
ACP MET 2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/AIREP Special*	APP ACP APS ACS
ACP MET 2.1.2	Relay meteorological information.	3	ICAO Doc 4444 ~~To: aircraft, MET office~~ *Optional content: flight information centre, adjacent ATS unit*	*ALL*

Subject 5 : NAVIGATION

The ~~general~~ subject objective is:

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

NAV 1	**MAPS AND AERONAUTICAL CHARTS**			
NAV 1.1	**Maps and charts**			
ACP NAV 1.1.1	Use relevant maps and charts.	3		*APP* ACP *APS* ACS
NAV 2	**INSTRUMENT~~AL~~ NAVIGATION**			
NAV 2.1	**Navigational systems**			
ACP NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, status of ground-based and satellite-based systems*	APP ACP APS ACS
ACP NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*Optional content: limitations, status, degraded procedures*	*ALL*
NAV 2.2	**Navigational assistance**			
ACP NAV 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	*APP* ACP *APS* ACS
NAV 2.3	**PBN applications**			
ACP NAV 2.3.1	State the navigation applications used in terminal and en-route environments.	1	Terminal-RNAV-1 (≈P-RNAV); En-route-RNAV-5 (B-RNAV) *Optional content: A-RNP, EC PBN Implementing Rule , ICAO Doc 9613*	ACP ACS
ACP NAV 2.3.2	Explain the principles and designation of navigation specifications in use.	2	*Optional content: performance, functionality, sensors, aircrew and controller requirements*	*APP* ACP *APS* ACS
ACP NAV 2.3.3	State future PBN developments.	1	A-RNP, APV *Optional content: RNP 3D, RNP 4D*	*ADI* *APP* ACP *APS* ACS

Subject 6 : AIRCRAFT

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

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

ACP ACFT 3.4.2	Use continuous climb techniques where applicable.	3		*APP* ACP *APS* ACS
ACP ACFT 3.4.3	Use direct routing where applicable.	3		*APP* ACP *APS* ACS
ACFT ~~3.5~~ ~~Miscellaneous factors~~				
ACP ACFT ~~3.5.1~~ 10.1.8 ATM	~~Appreciate the influence of operational requirements.~~	3	~~*Optional content: Military flying, Calibration flights, Aerial photography, banner towing*~~	ACP ACS
ACFT 3.5 Environmental factors				
ACP ACFT 3.5.1	Appreciate the performance restrictions due to environmental constraints.	3	*Optional content: fuel dumping, minimum flight levels, continuous descent operations*	ACP ACS
ACFT 4 AIRCRAFT DATA				
ACFT 4.1 Performance data				
ACP ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
ACP ACFT ~~4.1.2~~ 1.1.2 ABES	~~Identify potential or actual emergency situations.~~	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

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

HUM 1	**PSYCHOLOGICAL FACTORS**			
HUM 1.1	**Cognitive**			
ACP HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
ACP HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
ACP HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
HUM 2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
HUM 2.1	**Fatigue**			
ACP HUM 2.1.1	State factors that cause fatigue.	1	Shift work *Optional content: night shifts and rosters*	ALL
ACP HUM 2.1.2	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ACP HUM 2.1.3	Recognise the onset of fatigue in self.	1	*Optional content: ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ACP HUM 2.1.4	Recognise the onset of fatigue in others.	1		ALL
ACP HUM 2.1.5	Describe ~~Consider~~ appropriate action when recognising fatigue.	2		ALL
HUM 2.2	**Fitness**			
ACP HUM 2.2.1	Recognise signs of lack of personal fitness.	1		ALL
ACP HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
HUM 3	**SOCIAL AND ORGANISATIONAL FACTORS**			
HUM 3.1	**Team resource management (TRM)**			
ACP HUM 3.1.1	State the relevance ~~objectives~~ of TRM.	1	*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL

ACP HUM 3.1.2	State the content of the TRM concept.	1	*Optional content: team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
HUM 3.2	**Teamwork and team roles**			
ACP HUM 3.2.1	Identify reasons for conflict.	3		ALL
ACP HUM 3.2.2	Describe actions to prevent human conflicts.	2	*Optional content: TRM team roles*	ALL
ACP HUM 3.2.3	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
HUM 3.3	**Responsible behaviour**			
ACP HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
ACP HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
HUM 4	**STRESS**			
HUM 4.1	**Stress**			
ACP HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
HUM 4.2	**Stress management**			
ACP HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, the benefits of active stress management	ALL
ACP HUM 4.2.2	Respond to stressful situation by offering, asking or accepting assistance. ~~Obtain assistance in stressful situations.~~	3	*Optional content: the benefits of offering, accepting and asking for help in stressful situations*	ALL
ACP HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, abnormal situations, CISM	ALL
ACP HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
ACP HUM 4.2.5	Explain procedures used following an incident/accident.	2	*Optional content: CISM, counselling, human element*	ALL
HUM 5	**HUMAN ERROR**			
HUM 5.1	**Human error**			

ACP HUM 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 *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 5.1.2	Differentiate between the types of error.	2	Slips, lapses, mistakes *Optional content: ~~Slips, Lapses, Mistakes~~ ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 5.1.3	Describe error-prone conditions.	2	*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
ACP HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 5.1.6	Execute corrective actions.	3	Error compensation *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACP HUM 5.1.7	Explain the importance of error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practises*	ALL
ACP HUM 5.1.8	Describe the impact on an ATCO following an occurrence/incident.	2	*Optional content: reporting, SMS, investigation, CISM*	ALL
HUM 5.2	**Violation of rules**			
ACP HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
HUM ~~6~~ ~~WORKING METHODS~~				
HUM ~~6.1~~ ~~Efficiency~~				
ACP HUM ~~6.1.1~~	~~Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.~~	2	~~*Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety*~~	ALL
HUM 6	**COLLABORATIVE WORK**			
HUM 6.1	**Communication**			
ACP HUM 6.1.1 8.1.1	Use communication effectively in ATC.	3		ALL

ACP HUM 6.1.2 2.1.3 ATM	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
HUM 6.2	**Collaborative work within the same area of responsibility**			
ACP HUM 6.2.1 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ACP HUM 6.2.2 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*Optional content: strips legibility and encoding, ~~Radar~~ labels designation, feedback*	ALL
ACP HUM 6.2.3 8.2.3	List possible actions to provide a safe position handover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ACP HUM 6.2.4 8.2.4	Explain consequences of a missed position handover process.	2		ALL
HUM 6.3	**Collaborative work between different areas of responsibility**			
ACP HUM 6.3.1 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*Optional content: other sectors constraints, electronic coordination tools*	ALL
HUM 6.4	**Controller/pilot cooperation**			
ACP HUM 6.4.1 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*Optional content: workload, mutual knowledge, controller vs pilot mental picture*	ALL
~~HUM 7~~	**~~WORKING KNOWLEDGE~~**			
~~HUM 7.1~~	**~~Controller knowledge~~**			
ACP HUM ~~7.1.1~~ 1.1.2 LAW	~~Explain how to maintain and update professional knowledge to retain competence in the operational environment.~~	2	~~*Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*~~	ALL
~~HUM 9~~	**~~WORK ENVIRONMENT~~**			
~~HUM 9.1~~	**~~Ergonomics~~**			
ACP HUM ~~9.1.1~~	~~Appreciate the impact of working position ergonomics on controller activity.~~	3		ALL
~~HUM 10~~	**~~ATC SAFETY MANAGEMENT~~**			
~~HUM 10.1~~	**~~Experience feedback~~**			
ACP HUM ~~10.1.1~~ 3.1.1 LAW	~~State the importance of the controllers contribution to the experience feedback process.~~	1	~~*Optional content: voluntary reporting*~~	ALL

ACP HUM ~~10.1.2~~ 3.1.2 LAW	~~Describe how reported occurrences are analysed.~~	2	~~*Optional content: ESARR2, local procedures*~~	ALL
ACP HUM ~~10.1.3~~ 3.1.3 LAW	~~Name the means used to disseminate recommendations.~~	1	~~*Optional content: Safety letters, safety boards web pages*~~	ALL
ACP HUM ~~10.1.4~~ 3.1.4 LAW	~~Explain the "Just Culture" concept.~~	2	~~benefits, prerequisites, constraints~~ ~~*Optional content: EAM 2 GUI 6, GAIN Report*~~	ALL
HUM ~~10.2~~ ~~Safety investigation branch~~				
ACP HUM ~~10.2.1~~ 3.2.1 LAW	~~Describe role and mission of Safety Investigation Branch in the improvement of safety.~~	2		ALL
ACP HUM ~~10.2.2~~ 3.2.2 LAW	~~Define working methods of Safety Investigation Branch.~~	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject 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.

EQPS 1	**VOICE COMMUNICATIONS**			
EQPS 1.1	**Radio communications**			
ACP EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ACP EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
ACP EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
EQPS 1.2	**Other voice communications**			
ACP EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL
EQPS 2	**AUTOMATION IN ATS**			
EQPS 2.1	**Aeronautical fixed telecommunication network (AFTN)**			
ACP EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
EQPS 2.2	**Automatic data Interchange**			
ACP EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: ~~Sequencing systems,~~ automated information and coordination, OLDI*	APP ACP
EQPS 3	**CONTROLLER WORKING POSITION**			
EQPS 3.1	**~~General~~ Operation and monitoring of equipment**			
ACP EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ACP EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems ~~monitors, (CCIS)~~, UDF/VDF*	ALL
ACP EQPS 3.1.3	Operate ~~all~~ available equipment in ~~unusual/degraded/~~abnormal and emergency situations.	3		ALL
EQPS 3.2	**Situation displays and information systems**			

ACP EQPS 3.2.1	Use situation displays.	3		ALL
ACP EQPS 3.2.2	Check availability of information material.	3		ALL
ACP EQPS 3.2.3	Obtain ~~the~~ information from equipment.	3		APP ACP APS ACS
EQPS 3.3	**Flight data systems**			
ACP EQPS 3.3.1	Use the flight data information at controller working position.	3		ALL
EQPS 4	**FUTURE EQUIPMENT**			
EQPS 4.1	**New developments**			
ACP EQPS 4.1.1	Recognise future developments.	1	New advanced systems	ALL
EQPS 5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
EQPS 5.1	**~~General~~ Reaction to limitations**			
ACP EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL
ACP EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
EQPS 5.2	**Communication equipment degradation**			
ACP EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground-air and landline communications*	APP ACP APS ACS
ACP EQPS 5.2.2	Apply ~~Integrate~~ contingency procedures in the event of communication equipment degradation.	4->3	Procedures for total or partial degradation of ground-air and landline communications, alternative methods of transferring data	APP ACP APS ACS
EQPS 5.3	**Navigational equipment degradation**			
ACP EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: VOR, navigational aids*	ALL
ACP EQPS 5.3.2	Apply ~~Integrate~~ contingency procedures in the event of a navigational equipment degradation.	4->3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	ADI APP ACP APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

The ~~general~~ subject objective is:

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

PEN 1	**FAMILIARISATION ~~PROFESSIONAL ENVIRONMENT~~**			
PEN 1.1	**Study visit to area control centre**			
ACP PEN 1.1.1	Appreciate the functions and provision of an operational area control service.	3	Study visit to area control centre	ACP ACS
PEN 2	**AIRSPACE USERS**			
PEN 2.1	**Contributors to civil ATS operations**			
ACP PEN 2.1.1 1.1.1	Characterise civil ~~and military~~ ATS activities in area control centre.	2	Study visit to an area control centre *Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ~~ACC,~~ AIS, RCC~~, Air Defence Units~~*	ACP ACS
ACP PEN 2.1.2 1.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to ~~e.g.~~ engineering services, fire and emergency services, airline operations offices*	ALL
PEN 2.2	**Contributors to military ATS operations**			
ACP PEN 2.2.1 1.1.1	Characterise ~~civil and~~ military ATS activities.	2	*Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
PEN 3	**CUSTOMER RELATIONS**			
PEN 3.1	**~~Customer relations~~ Provision of services and user requirements**			
ACP PEN 3.1.1 1.2.1	Identify the role of ATC as a service provider. ~~and the requirements of the ATS users.~~	3	~~*Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*~~	ALL
ACP PEN 3.1.2 1.2.1	Appreciate ATS users requirements.	3		ALL
PEN 4	**ENVIRONMENTAL PROTECTION**			
PEN 4.1	**Environmental protection**			
ACP PEN 4.1.1 1.3.1	Appreciate the mitigation techniques used en-route to minimise the aviation's impact on the environment. ~~Describe processes used to ensure environmental protection.~~	2	*Optional content: free route airspace (FRA), night/weekend routes ~~curfews, relations with local community, relations with environmental associations, relevant administrations~~* *ICAO Circular 303 - Operational opportunities to minimize fuel use and reduce emissions*	ACP ACS

Subject 10: ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS

The ~~general~~ subject objective is:

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

ABES 1	**~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS (ABES)**			
ABES 1.1	**~~General~~ Overview of ABES**			
ACP ABES 1.1.1	List common ~~unusual/degraded/~~abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure, unreliable instruments, runway incursion*	ALL
ACP ABES 1.1.2 4.1.2 ACFT	Identify potential or actual abnormal and emergency situations.	3		ALL
ACP ABES 1.1.3 1.1.2	Take into account the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
ACP ABES 1.1.4 1.1.3	Take into account that procedures do not ~~don't~~ exist for all ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: real life examples*	ALL
ACP ABES 1.1.5 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL
ABES 2	**SKILLS IMPROVEMENT**			
ABES 2.1	**Communication effectiveness**			
ACP ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, silence instruction	ALL
ACP ABES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
ABES 2.2	**Avoidance of mental overload**			
ACP ABES 2.2.1	Describe actions to keep ~~the~~ control of the situation.	2	*Optional content: sector splitting, holding, flow management, task delegation*	ALL
ACP ABES 2.2.2	Organise priority of actions.	4		ALL
ACP ABES 2.2.3	Ensure ~~an~~ effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL

ACP ABES 2.2.4	Consider asking for help.	2		ALL
ABES 2.3	**Air / ground cooperation**			
ACP ABES 2.3.1	Collect appropriate information relevant ~~for~~ to the situation.	3		ALL
ACP ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
ABES 3	**PROCEDURES FOR ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS**			
ABES 3.1	**~~General~~ Application of procedures for ABES**			
ACP ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ALL
ABES 3.2	**Radio failure**			
ACP ABES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 *Optional content: military procedures*	ALL
ACP ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*Optional content: prolonged loss of communication*	ALL
ABES 3.3	**Unlawful interference and aircraft bomb threat**			
ACP ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
ABES 3.4	**Strayed or unidentified aircraft**			
ACP ABES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ACP ABES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
ABES 3.5	**Diversions**			
ACP ABES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS

AMC1 to Appendix 7 of ANNEX I — PART-ATCO

Approach Control Surveillance Rating (APS)

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.O -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

~~3.3.3~~ - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

TABLE OF CONTENTS

Subject 1 : INTRODUCTION TO THE COURSE

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

INTR 1	**COURSE MANAGEMENT**			
INTR 1.1	**Course introduction**			
APS INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
INTR 1.2	**Course administration**			
APS INTR 1.2.1	State course administration.	1		ALL
INTR 1.3	**Study material and training documentation**			
APS INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
APS INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: ~~Training documentation~~, supplementary information, library*	ALL
INTR 2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
INTR 2.1	**Course content and organisation**			
APS INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
APS INTR 2.1.2	State the subjects of the course and their purpose.	1		ALL
APS INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
APS INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
INTR 2.2	**Training ethos**			
APS INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner/instructor feedback, instructor/instructor feedback	ALL
INTR 2.3	**~~The~~ Assessment process**			
APS INTR 2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The ~~general~~ subject 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.

LAW 1	**ATCO LICENSING / CERTIFICATE OF COMPETENCE**			
LAW 1.1	**Privileges and conditions**			
APS LAW 1.1.1	Appreciate the conditions which ~~must~~ shall be met to ~~for the~~ issue an ~~of~~ Approach Control Surveillance rating ~~with Radar endorsement~~.	3	~~EU Community air traffic controller licence Directive,~~ Regulation (EU) 2015/340 on ATCO Licences, ~~ESARR5 rating, valid rating~~ *Optional content: national documents~~; European Manual of Personnel Licensing - Air Traffic Controllers~~*	APS
APS LAW 1.1.2 6.1.1 HUM	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
APS LAW 1.1.3 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	~~Incident/Accident, Competence in doubt, Medical,~~ Regulation (EU) 2015/340 on ATCO Licences	ALL
LAW 2	**RULES AND REGULATIONS**			
LAW 2.1	**Reports**			
APS LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report *Optional content: routine air reports, breach of regulations, watch/log book, records*	ALL
APS LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	~~ESARR 2~~, Reporting culture, air traffic incident report *Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2*	ALL
APS LAW 2.1.3	Use forms for reporting.	3	Regulation (EU) No 376/2014, air traffic incident reporting form(s) *Optional content: ~~ICAO Doc 4444 Appendix 4~~, routine air reports, breach of regulations, watch/log book, records*	ALL
LAW 2.2	**Airspace**			
APS LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Approach Control Surveillance rating ~~with Radar endorsement~~ operations.	3		APS

APS LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*Optional content: Regulation (EU) No 923/2012, ICAO Annex 2, ICAO Annex 11, international requirements, civil requirements, military requirements, areas of responsibility, sectorization, national requirements*	ALL
APS LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL

LAW 3 ATC SAFETY MANAGEMENT

LAW 3.1 ~~Experience~~ Feedback process

APS LAW 3.1.1 10.1.1 HUM	State the importance of ~~the~~ controller~~s~~ contribution to the ~~experience~~ feedback process.	1	*Optional content: voluntary reporting*	ALL
APS LAW 3.1.2 10.1.2 HUM	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, local procedures*	ALL
APS LAW 3.1.3 10.1.3 HUM	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards web pages*	ALL
APS LAW 3.1.4 10.1.4 HUM	Appreciate ~~Explain~~ the 'Just Culture' concept.	2->3	Benefits, prerequisites, constraints *Optional content: EAM 2 GUI 6, GAIN Report*	ALL

LAW 3.2 Safety Investigation ~~Branch~~

APS LAW 3.2.1 10.2.1 HUM	Describe role and mission of Safety Investigation ~~Branch~~ in the improvement of safety.	2		ALL
APS LAW 3.2.2 10.2.2 HUM	Define working methods of Safety Investigation ~~Branch~~.	1		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

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

ATM 1	**PROVISION OF SERVICES ~~AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT~~**			
ATM 1.1	**Air traffic control (ATC) service**			
APS ATM 1.1.1 1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS
APS ATM 1.1.2 1.1.1	Provide ~~the appropriate~~ ~~ATC~~ approach control service.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals	APP APS
ATM 1.2	**Flight information service (FIS)**			
APS ATM 1.2.1 1.2.2	Provide FIS.	4	ICAO Doc 4444 *Optional content: national documents*	*ALL*
APS ATM 1.2.2 1.2.3	Use ~~radar~~ ATS surveillance system for the provision of FIS.	3	ICAO Doc 4444, information to identified aircraft concerning: traffic, navigation *Optional content: weather*	APS ACS
APS ATM 1.2.3 1.2.1	Issue ~~Relay~~ appropriate information concerning the location of ~~other~~ conflicting traffic.	3	ICAO Doc 4444, traffic information, essential traffic information	APS ACS *APP ACP*
APS ATM 1.2.4	Appreciate the use of ATIS for the provision of flight information service by approach controller.	3		APS *APP*
ATM 1.3	**Alerting service (ALRS)**			
APS ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444 *Optional content: national documents*	ALL
APS ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10, ICAO Doc 4444, *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations*	ALL
APS ATM 1.3.3	Use ~~radar~~ ATS surveillance system for the provision of ALRS.	3		APS ACS
ATM 1.4	**ATS System capacity and air traffic flow management**			
APS ATM 1.4.1	Appreciate principles of ~~ATFM~~ ATS system capacity and air traffic flow management.	3	*Optional content: EUROCONTROL ATFCM Users Manual ~~Working principles of ATFM;~~ FABs, FUA, free flight, etc.*	APP ACP APS ACS

APS ATM 1.4.2	Apply flow management procedures in the provision of ATC.	3	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
APS ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
APS ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
APS ATM 1.4.5	Inform supervisor of situation.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
APS ATM 1.4.6	Organise traffic flows and patterns to take account of ATS surveillance system capability.	4	~~*e.g. radar coverage*~~	APS ACS
ATM 1.5	**Airspace management (ASM)**			
APS ATM 1.5.1	Appreciate the principles and means of ASM.	3	Regulation (EC) No 551/2004, Regulation (EC) 2150/2005, Regulation (EC) No 730/2006 *Optional content: FABs, EUROCONTROL Specification for the application of FUA, ~~ICAO Doc 4444~~, ~~EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA~~, TSAs, CDRs, CBAs*	APP ACP APS ACS
APS ATM 1.5.2	Organise traffic to take account of ASM.	4	Real-time activation, deactivation or reallocation of airspace *Optional content: CDR, TSA, TRA, CBA*	APS *ACS*
ATM 2	**COMMUNICATION**			
ATM 2.1	**Effective communication**			
APS ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *Optional content: ICAO Doc 9432 RTF manual, standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
APS ATM 2.1.2	Ensure effective ~~Perform~~ communication. ~~effectively.~~	3->4	Communication techniques, readback/verification of readback	ALL
APS ATM ~~2.1.3~~	~~Analyse examples of pilot and controller communication for effectiveness.~~	4		ALL
6.1.2 HUM				
ATM 3	**ATC CLEARANCES AND ATC INSTRUCTIONS**			

ATM 3.1	**ATC clearances**			
APS ATM 3.1.1	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
APS ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
APS ATM 3.1.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 3.2	**ATC instructions**			
APS ATM 3.2.1	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
APS ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
APS ATM 3.2.3	Ensure the agreed course of action is carried out.	4		ALL
ATM 4	**COORDINATION**			
ATM 4.1	**Necessity for coordination**			
APS ATM 4.1.1	Identify the need for coordination.	3		ALL
ATM 4.2	**Tools and methods for coordination**			
APS ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL
ATM 4.3	**Coordination procedures**			
APS ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *Optional content: release point*	ALL
APS ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL
APS ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5	~~When additional traffic cannot be accepted by adjacent position/unit ; When additional traffic cannot be accepted by own position/unit, etc.~~	ALL

APS ATM 4.3.4	Ensure the agreed course of action is carried out.	4		ALL
APS ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
APS ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
ATM 5	**ALTIMETRY AND LEVEL ALLOCATION**			
ATM 5.1	**Altimetry**			
APS ATM 5.1.1	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.	4	ICAO Doc 8168, ICAO Doc 4444	ALL
APS ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
ATM 5.2	**Terrain clearance**			
APS ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*Optional content: minimum vectoring altitude, terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APS ACS
ATM 6	**SEPARATIONS**			
ATM 6.1	**Vertical separation**			
APS ATM 6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, level allocation, during climb/descent, rate of climb/descent, holding pattern	APP APS
APS ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *Optional content: level allocation, during climb/descent, rate of climb/descent*	APP ACP APS ACS
APS ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
APS ATM 6.1.4	Provide vertical separation in a surveillance environment.	4	Pressure altitude-derived information, pilot level reports *Optional content: into/out of ATS surveillance system coverage*	APS ACS
ATM 6.2	**Longitudinal ~~Horizontal~~ separation in a surveillance environment**			
APS ATM 6.2.1	Provide longitudinal separation in a surveillance environment.	4	Successive departures, successive arrivals, overflights, speed control, silent ~~radar~~ transfer, ICAO Doc 4444 ~~*Optional content: Within ATS surveillance system coverage*~~	APS

ATM 6.3	**Delegation of separation**			
APS ATM 6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
APS ATM 6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3	ICAO Doc 4444	APP APS
ATM 6.4	**Wake turbulence distance-based separation**			
APS ATM 6.4.1	Provide distance-based wake turbulence separation.	4	ICAO Doc 4444 *Optional content: national documents*	APS *ACS*
ATM 6.5	**~~Radar~~ Separation based on ATS surveillance systems**			
APS ATM 6.5.1	Describe how separation based on ATS surveillance systems is applied.	2	ICAO Doc 4444	APS *ACS*
APS ATM 6.5.2	Provide ~~radar~~ horizontal separation.	4	ICAO Doc 4444, ICAO Doc 7030, local operation manuals, holding	APS *ACS*
APS ATM 6.5.3	Provide ~~radar~~ horizontal separation by ~~using practising~~ vectoring ~~techniques~~ in a variety of situations.	4	*Optional content: transit, meteorological phenomena, vectoring for approach, departure vs transit vs arrival*	APS *ACS*
APS ATM 6.5.4	Ensure horizontal or vertical separation from airspace boundaries.	4	Adjacent sectors, PRD, TSAs	APS *ACS*
ATM 7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
ATM 7.1	**Airborne collision avoidance systems**			
APS ATM 7.1.1 7.1.6 B	Differentiate between ACAS advisory thresholds and ~~ATC~~ separation standards applicable in the approach control environment.	2	ICAO Doc 9863 *Optional content: EUROCONTROL ACAS web page*	APP APS
APS ATM 7.1.2 7.1.4 B	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444	ALL
APS ATM 7.1.3 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, TAWS *Optional content: ~~GPWS~~ EUROCONTROL ACAS web page*	ALL
ATM 7.2	**Ground-based safety nets**			
APS ATM 7.2.1	Describe the controller responsibility during and following safety net warnings.	2	ICAO Doc 4444 *Optional content: STCA, MSAW, APW, APM*	APS ACS

APS ATM 7.2.2 7.2.1	Respond to ground-based safety nets warnings.	3	*Optional content: STCA, MSAW, APW, APM*	APS ACS

ATM 8 DATA DISPLAY

ATM 8.1 Data management

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

ATM 9 OPERATIONAL ENVIRONMENT (SIMULATED)

ATM 9.1 Integrity of the operational environment

APS ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: briefing, notices, local orders, verification of information*	ALL
APS ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS

ATM 9.2 Verification of the currency of operational procedures

APS ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, LOAs, NOTAM, AICs*	ALL
APS ATM 9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS

ATM 9.3 Handover-takeover

APS ATM 9.3.1	Transfer information to the relieving controller.	3		ALL

APS ATM 9.3.2	Obtain information from the controller handing over.	3		ALL

ATM 10 PROVISION OF CONTROL SERVICE

ATM 10.1 Responsibility and processing of information

APS ATM 10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	ALL
APS ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	ALL
APS ATM 10.1.3 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
APS ATM 10.1.4 10.1.3	Obtain operational information.	3	ICAO Doc 4444, local operation manuals	APP ACP APS ACS
APS ATM 10.1.5 10.1.4	Interpret operational information.	5		APP ACP APS ACS
APS ATM 10.1.6 10.1.5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
APS ATM 10.1.7 10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
APS ATM ~~10.1.7~~ 10.3.6	~~Ensure an adequate priority of actions.~~	4	~~Formal and situational requirements, workload~~	APP ACP APS ACS
APS ATM 10.1.8 3.6.1 ACFT	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, aerial photography*	ALL
APS ATM ~~10.1.8~~ 10.4.2	~~Balance the workload with the traffic demand against personal capacity.~~	5	~~e.g. in own sector, in adjacent sectors~~	APP ACP APS ACS

ATM 10.2 ATS surveillance service ~~with Radar~~

APS ATM 10.2.1	Explain the responsibility for the provision of an ATS surveillance service appropriate to APS rating ~~with Radar endorsement~~.	2	ICAO Doc 4444, ICAO Annex 11, local operation manuals	APS

APS ATM 10.2.2	Explain the functions that may be performed with the use of ~~radar~~-ATS surveillance systems derived information presented on a situation display.	2	ICAO Doc 4444	APS *ACS*
APS ATM 10.2.3	Provide planning, coordination and control actions appropriate to the VFR, SVFR and IFR in VMC and IMC.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 2,~~ ICAO Annex 11, ICAO Doc 4444	APS *APP*
APS ATM 10.2.4	Apply the procedures for termination of ATS surveillance service.	3	ICAO Doc 4444 *Optional content: transfer of control, termination or interruption of ATS surveillance service*	APS ACS
ATM 10.3 Traffic management process				
APS ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, scanning, traffic projection	APS ACS
APS ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		ALL
APS ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
APS ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		APP ACP APS ACS
APS ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
APS ATM 10.3.6 10.1.7	Ensure an adequate priority of actions.	4	~~Formal and situational requirements, workload~~	*ALL*
APS ATM 10.3.7	Execute selected plan in a timely manner.	3		APP ACP APS ACS
APS ATM 10.3.8	Ensure a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow up	ALL
ATM 10.4 Handling traffic ~~Vectoring~~				
APS ATM 10.4.1	Manage arrivals, departures and overflights.	4		APP ACP APS ACS
APS ATM 10.4.2 10.1.8	Balance the workload ~~with the traffic demand~~ against personal capacity.	5	*Optional content: ~~in own sector, in adjacent sectors~~ re-routing, re-planning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS

APS ATM 10.4.3 10.3.1	Define flight path monitoring and vectoring.	1	ICAO Doc 4444	APS ACS
APS ATM 10.4.4 10.3.2	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444	APS ACS
APS ATM 10.4.5 10.3.3	Provide vectoring.	4	ICAO Doc 4444 *Optional content: separation, expediting arrivals, departures and/or climb to cruising levels, aircraft leaving the hold, navigation assistance, uncontrolled airspace, etc.*	APS ACS
APS ATM 10.4.6 10.3.4	Apply the procedures for termination of vectoring.	3	ICAO Doc 4444	APS ACS
APS ATM 10.4.7	Manage traffic on different types of approaches.	4	Precision, non-precision, visual	APP APS
APS ATM 10.4.8	Initiate missed approach.	3	ICAO Doc 4444	APP APS
APS ATM 10.4.9	Integrate aircraft on missed approach into the traffic situation.	4		APP APS
ATM 10.5 Control service with advanced system support				
APS ATM 10.5.1 10.4.1	Appreciate ~~Explain~~ the impact of advanced systems on the provision of approach control service.	2->3	*Optional content: sequencing systems, arrival management, departure management, automated holding lists, vertical traffic displays, conflict detection and decision making tools, automated information and coordination tools*	APS
ATM 11 HOLDING				
ATM 11.1 General holding procedures				
APS ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
APS ATM 11.1.2	Appreciate the factors affecting holding patterns. ~~effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.~~	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
ATM ~~11.2~~ ~~Vertical separation~~				
APS ATM ~~11.2.1~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern.~~	4		APP ACP APS ACS

APS ATM ~~11.2.2~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern and other aircraft.~~	4		APP ACP APS ACS
ATM 11.2 Approaching aircraft				
APS ATM 11.2.1 11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3		APP APS
APS ATM 11.2.2 11.3.2	Organise the traffic landing sequence in a holding pattern.	4	*Optional content: company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management*	APP APS
ATM 11.3 Holding in a surveillance environment				
APS ATM ~~11.4.1~~ 10.4.5	~~Provide vectors to aircraft leaving a holding pattern.~~	4		APS ACS
APS ATM 11.3.1 11.4.2	Organise traffic to separate other aircraft from holding aircraft.	4		APS ACS
APS ATM ~~11.4.3~~ 12.3.1	~~Ensure identity of aircraft leaving a holding pattern.~~	4		APS ACS
APS ATM 11.3.2 11.4.4	Integrate system support, when available.	4	*Optional content: arrival management system, automated holding lists, vertical traffic displays*	APS ACS
ATM 12 IDENTIFICATION				
ATM 12.1 Establishment of identification				
APS ATM 12.1.1 12.1.2	Appreciate the precautions when establishing identification.	3	~~ICAO Doc 4444, SSR~~ ~~*Optional content: PSR*~~	APS ACS
APS ATM ~~12.1.1~~ 12.1.1 9.4.2 ATMB	~~Apply the methods of establishing identification.~~	3	~~ICAO Doc 4444, SSR~~ ~~*e.g. PSR*~~	APS ACS
APS ATM 12.1.2	Identify aircraft.	3	*Optional content: PSR, SSR or ADS identification method*	APS ACS
APS ATM 12.1.3	Apply procedures in the case of misidentification.	3		APS ACS
ATM 12.2 Maintenance of identification				

APS ATM 12.2.1	Appreciate the necessity to maintain identification.	3		APS ACS
ATM 12.3 Loss of identity				
APS ATM 12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	*Optional content: out of ~~radar~~ ATS surveillance system coverage, ~~loss~~ failure of ATS surveillance system ~~service~~, weather clutter, other clutter, garbling, holding, etc.*	APS ACS
APS ATM 12.3.2	Apply methods to re-establish identification.	3		APS ACS
APS ATM 12.3.3	Respond to loss/doubt concerning identification.	3	*Optional content: procedural separation*	APS ACS
ATM 12.4 Position information				
APS ATM 12.4.1	Appreciate the circumstances when position information should be passed to the aircraft.	3		APS ACS
APS ATM 12.4.2	State the format in which position information can be passed to aircraft.	1	ICAO Doc 4444	APS ACS
ATM 12.5 Transfer of identity				
APS ATM 12.5.1	Apply the methods of transfer of identification.	3		APS ACS
APS ATM 12.5.2	Appreciate the precautions when transferring identification.	3		APS ACS

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

MET 1	**METEOROLOGICAL PHENOMENA**			
MET 1.1	**Meteorological phenomena**			
APS MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, icing, clear air turbulence (CAT), turbulence, microburst, wind shear, severe mountain waves, line squalls, volcanic ash ~~*Optional content: Volcanic ash*~~	APP APS
APS MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena ~~Separation, holding, diversions, re-routings, etc.~~*	*ALL*
APS MET ~~1.1.3~~ 1.1.2	~~Integrate data about meteorological phenomena into clearances, instructions and transmitted information.~~	4	~~*Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash*~~	APP ACP APS ACS
APS MET 1.1.3 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Re-routing, level change, etc.	APP ACP APS ACS
MET 2	**SOURCES OF METEOROLOGICAL DATA**			
MET 2.1	**Sources of meteorological information**			
APS MET 2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/AIREP Special*	APP ACP APS ACS
APS MET 2.1.2	Relay meteorological information.	3	ICAO Doc 4444 ~~To: aircraft, MET office~~ *Optional content: flight information centre, adjacent ATS unit*	*ALL*

Subject 5 : NAVIGATION

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

NAV 1	**MAPS AND AERONAUTICAL CHARTS**			
NAV 1.1	**Maps and charts**			
APS NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Instrument approach charts, SID charts, aerodrome charts, visual approach charts *Optional content: military maps and charts*	ADI APP APS
APS NAV 1.1.2 1.1.1	Use relevant maps and charts.	3		APP *ACP* APS *ACS*
NAV 2	**INSTRUMENT~~AL~~ NAVIGATION**			
NAV 2.1	**Navigational systems**			
APS NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, status of ground-based and satellite-based systems*	APP ACP APS ACS
APS NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*Optional content: limitations, status, degraded procedures*	*ALL*
NAV 2.2	**Stabilised approach**			
APS NAV 2.2.1	Describe the concept of stabilised approach.	2	ICAO Doc 8168 *Optional content: SKYbrary, Regulation (EC) No 1899/2006*	ADV ADI APP APS
APS NAV 2.2.2	Appreciate the effect of late change of runway-in-use or type of approach for landing aircraft.	3		APP APS
APS NAV 2.2.3	Appreciate controller actions that may contribute to unstabilised approach.	3	Inappropriate speed control, vectoring for short final, vectoring for approach with significant tailwind, glide path interception from above, lack or incorrect distance to touchdown information, delayed descent	APS
NAV 2.3	**Instrument departures and arrivals**			
APS NAV 2.3.1	Characterise SIDs.	2		ADI APP APS
APS NAV 2.3.2	Describe the types and phases of instrument approach procedures.	2		APP APS

APS NAV 2.3.3	Describe the relevant minima applicable for a precision/non-precision and visual approach.	2		ADI APP APS
NAV 2.4	**Navigational assistance**			
APS NAV 2.4.1 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	APP *ACP* APS *ACS*
APS NAV 2.4.2 2.2.2	Assist aircraft in navigation when required.	3	Aircraft observed to be deviating from its known intended route, on request	APS *ACS*
NAV 2.5	**Satellite-based systems**			
APS NAV 2.5.1 2.3.1	State the different applications ~~operations associated with~~ of satellite-based systems relevant for approach operations.	1	*Optional content: NPA, APV-baro VNAV, APV, LPV, precision approach, ICAO Doc 8168 Vol.2*	APP APS
NAV 2.6	**PBN applications**			
APS NAV 2.6.1	State the navigation applications used in approach and terminal environments.	1	Approach-RNP APCH/ RNP AR APCH; Terminal-RNAV-1 (≈P-RNAV) *Optional content: A-RNP, EU PBN Implementing Rule, ICAO Doc 9613*	APP APS
APS NAV 2.6.2	Explain the principles and designation of navigation specifications in use.	2	*Optional content: performance, functionality, sensors, aircrew and controller requirements*	APP *ACP* APS *ACS*
APS NAV 2.6.3	State future PBN developments.	1	A-RNP, APV *Optional content: RNP 3D, RNP 4D*	*ADI* APP *ACP* APS *ACS*

Subject 6 : AIRCRAFT

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

ACFT 1	**AIRCRAFT INSTRUMENTS**			
ACFT 1.1	**Aircraft instruments**			
APS ACFT 1.1.1	Integrate ~~the~~ information ~~indication~~ from aircraft instruments provided by the pilot in the provision of ATS.	4	~~*Optional content: TCAS, wind shear indicator, weather radar*~~	ALL
APS ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios, ~~SELCAL~~*	ALL
APS ACFT 1.1.3	Explain the operation of ~~transponder~~ on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability	ADI APS ACS
APS ACFT ~~1.1.4~~	~~Explain the use and benefits of CPDLC.~~	2		ALL
ACFT 2	**AIRCRAFT CATEGORIES**			
ACFT 2.1	**Wake turbulence ~~categories~~**			
APS ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
APS ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
ACFT 2.2	**Application of ICAO approach categories**			
APS ACFT 2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168	ADI APP APS
APS ACFT 2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3		ADI APP APS
ACFT 3	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**			
ACFT 3.1	**Climb factors**			
APS ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
APS ACFT 3.1.2	Appreciate the influence of factors affecting aircraft on take-off.	3	*Optional content: runway conditions, runway slope, aerodrome elevation, wind, temperature, aircraft configuration, airframe contamination and aircraft mass*	APP APS
ACFT 3.2	**Cruise factors**			

APS ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
ACFT 3.3	**Descent and initial approach factors**			
APS ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, aircraft configuration, cabin pressurisation*	APP APS
ACFT 3.4	**Final approach and landing factors**			
APS ACFT 3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	*Optional content: wind, aircraft configuration, mass, meteorological conditions, runway conditions, runway slope, aerodrome elevation*	APP APS
ACFT 3.5	**Economic factors**			
APS ACFT 3.5.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile*	APP APS
APS ACFT 3.5.2	Use continuous climb techniques where applicable.	3		APP *ACP* APS *ACS*
APS ACFT 3.5.3	Use direct routing where applicable.	3		APP *ACP* APS *ACS*
ACFT ~~3.6~~	**~~Miscellaneous Factors~~**			
APS ACFT ~~3.6.1~~ 10.1.8 ATM	~~Appreciate the influence of operational requirements.~~	3	~~*Optional content: Military flying, Calibration flights, Aerial photography, banner towing*~~	APP APS
ACFT 3.6	**~~Ecological~~ Environmental factors**			
APS ACFT 3.6.1 3.7.1	Appreciate the performance restrictions due to environmental constraints. ~~Estimate the influence of ecological factors affecting aircraft.~~	3	*Optional content: fuel dumping, noise abatement procedures, minimum flight levels, bird hazard, continuous descent operations ~~Approach~~*	APP APS
ACFT 4	**AIRCRAFT DATA**			
ACFT 4.1	**Performance data**			
APS ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
APS ACFT ~~4.1.2~~ 1.1.2 ABES	~~Identify potential or actual emergency situations.~~	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

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

HUM 1	**PSYCHOLOGICAL FACTORS**			
HUM 1.1	**Cognitive**			
APS HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
APS HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
APS HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
HUM 2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
HUM 2.1	**Fatigue**			
APS HUM 2.1.1	State factors that cause fatigue.	1	Shift work *Optional content: night shifts and rosters*	ALL
APS HUM 2.1.2	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
APS HUM 2.1.3	Recognise the onset of fatigue in self.	1	*Optional content: ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
APS HUM 2.1.4	Recognise the onset of fatigue in others.	1		ALL
APS HUM 2.1.5	Describe ~~Consider~~ appropriate action when recognising fatigue.	2		ALL
HUM 2.2	**Fitness**			
APS HUM 2.2.1	Recognise signs of lack of personal fitness.	1		ALL
APS HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
HUM 3	**SOCIAL AND ORGANISATIONAL FACTORS**			
HUM 3.1	**Team resource management (TRM)**			

APS HUM 3.1.1	State the relevance ~~objectives~~ of TRM.	1	*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
APS HUM 3.1.2	State the content of the TRM concept.	1	*Optional content: team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
HUM 3.2	**Teamwork and team roles**			
APS HUM 3.2.1	Identify reasons for conflict.	3		ALL
APS HUM 3.2.2	Describe actions to prevent human conflicts.	2	*Optional content: TRM team roles*	ALL
APS HUM 3.2.3	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
HUM 3.3	**Responsible behaviour**			
APS HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
APS HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
HUM 4	**STRESS**			
HUM 4.1	**Stress**			
APS HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
HUM 4.2	**Stress management**			
APS HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, the benefits of active stress management	ALL
APS HUM 4.2.2	Respond to stressful situation by offering, asking or accepting assistance. ~~Obtain assistance in stressful situations.~~	3	*Optional content: the benefits of offering, accepting and asking for help in stressful situations*	ALL
APS HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, abnormal situations, CISM	ALL
APS HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
APS HUM 4.2.5	Explain procedures used following an incident/accident.	2	*Optional content: CISM, counselling, human element*	ALL
HUM 5	**HUMAN ERROR**			

HUM 5.1	**Human error**			
APS HUM 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 *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 5.1.2	Differentiate between the types of error.	2	Slips, lapses, mistakes *Optional content: ~~Slips, Lapses, Mistakes~~ ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 5.1.3	Describe error-prone conditions.	2	*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
APS HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 5.1.6	Execute corrective actions.	3	Error compensation *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
APS HUM 5.1.7	Explain the importance of error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practises*	ALL
APS HUM 5.1.8	Describe the impact on an ATCO following an occurrence/incident.	2	*Optional content: reporting, SMS, investigation, CISM*	ALL
HUM 5.2	**Violation of rules**			
APS HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
HUM ~~6~~	**~~WORKING METHODS~~**			
HUM ~~6.1~~	**~~Efficiency~~**			
APS HUM ~~6.1.1~~	~~Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.~~	2	~~*Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety*~~	ALL
HUM 6	**COLLABORATIVE WORK**			
HUM 6.1	**Communication**			

APS HUM 6.1.1 8.1.1	Use communication effectively in ATC.	3		ALL
APS HUM 6.1.2 2.1.3 ATM	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
HUM 6.2	**Collaborative work within the same area of responsibility**			
APS HUM 6.2.1 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
APS HUM 6.2.2 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*Optional content: strips legibility and encoding, ~~Radar~~ labels designation, feedback*	ALL
APS HUM 6.2.3 8.2.3	List possible actions to provide a safe position handover.	1	*Optional content: rigour, preparation, overlap time*	ALL
APS HUM 6.2.4 8.2.4	Explain consequences of a missed position handover process.	2		ALL
HUM 6.3	**Collaborative work between different areas of responsibility**			
APS HUM 6.3.1 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*Optional content: other sectors constraints, electronic coordination tools*	ALL
HUM 6.4	**Controller/pilot cooperation**			
APS HUM 6.4.1 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*Optional content: workload, mutual knowledge, controller vs pilot mental picture*	ALL
~~HUM 7~~	**~~WORKING KNOWLEDGE~~**			
~~HUM 7.1~~	**~~Controller knowledge~~**			
APS HUM ~~7.1.1~~ 1.1.2 LAW	~~Explain how to maintain and update professional knowledge to retain competence in the operational environment.~~	2	~~*Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*~~	ALL
~~HUM 9~~	**~~WORK ENVIRONMENT~~**			
~~HUM 9.1~~	**~~Ergonomics~~**			
APS HUM ~~9.1.1~~	~~Appreciate the impact of working position ergonomics on controller activity.~~	3		ALL
HUM ~~10~~	**~~ATC SAFETY MANAGEMENT~~**			

HUM ~~10.1~~ ~~Experience feedback~~				
APS HUM ~~10.1.1~~ 3.1.1 LAW	~~State the importance of the controllers contribution to the experience feedback process.~~	1	~~*Optional content: voluntary reporting*~~	ALL
APS HUM ~~10.1.2~~ 3.1.2 LAW	~~Describe how reported occurrences are analysed.~~	2	~~*Optional content: ESARR2, local procedures*~~	ALL
APS HUM ~~10.1.3~~ 3.1.3 LAW	~~Name the means used to disseminate recommendations.~~	1	~~*Optional content: Safety letters, safety boards web pages*~~	ALL
APS HUM ~~10.1.4~~ 3.1.4 LAW	~~Explain the "Just Culture" concept.~~	2	~~benefits, prerequisites, constraints~~ ~~*Optional content: EAM 2 GUI 6, GAIN Report*~~	ALL
HUM ~~10.2~~ ~~Safety investigation branch~~				
APS HUM ~~10.2.1~~ 3.2.1 LAW	~~Describe role and mission of Safety Investigation Branch in the improvement of safety.~~	2		ALL
APS HUM ~~10.2.2~~ 3.2.2 LAW	~~Define working methods of Safety Investigation Branch.~~	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject 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.

EQPS 1	**VOICE COMMUNICATIONS**			
EQPS 1.1	**Radio communications**			
APS EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
APS EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
APS EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
EQPS 1.2	**Other voice communications**			
APS EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL
EQPS 2	**AUTOMATION IN ATS**			
EQPS 2.1	**Aeronautical fixed telecommunication network (AFTN)**			
APS EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
EQPS 2.2	**Automatic data Interchange**			
APS EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	ADV ADI APS ACS
EQPS 3	**CONTROLLER WORKING POSITION**			
EQPS 3.1	**~~General~~ Operation and monitoring of equipment**			
APS EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
APS EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems ~~monitors, (CCIS)~~, UDF/VDF*	ALL
APS EQPS 3.1.3	Operate ~~all~~ available equipment in ~~unusual/degraded/~~abnormal and emergency situations.	3		ALL

EQPS 3.2	**Situation displays and information systems**			
APS EQPS 3.2.1	Use situation displays.	3		ALL
APS EQPS 3.2.2	Check availability of information material.	3		ALL
APS EQPS 3.2.3	Obtain ~~the~~ information from equipment.	3		APP ACP APS ACS
EQPS 3.3	**Flight data systems**			
APS EQPS 3.3.1	Use the flight data information at controller working position.	3		ALL
EQPS 3.4	**Use of ~~Radars~~ ATS surveillance system**			
APS EQPS 3.4.1	Use the ATS surveillance system functions.~~Operate radar equipment.~~	3		APS ACS
APS EQPS 3.4.2	Analyse the information provided by the ~~radar equipment~~ ATS surveillance system.	4		APS ACS
APS EQPS 3.4.3	Assign codes.	4		APS ACS
APS EQPS 3.4.4	Appreciate the use of advanced surveillance technology ~~Mode S~~.	3	*Optional content: Mode S, ADS-B, MLAT*	APS ACS
EQPS 3.5	**Advanced systems**			
APS EQPS 3.5.1	Appreciate the ~~U~~use of controller pilot datalink communications when available.	3		APS ACS
APS EQPS 3.5.2	Appreciate the ~~U~~use of ~~the~~ information provided by advanced systems~~, when available~~.	3	*Optional content: trajectory-based information, MTCD, MONA, etc.*	APS ACS
EQPS 4	**FUTURE EQUIPMENT**			
EQPS 4.1	**New developments**			
APS EQPS 4.1.1	Recognise future developments.	1	New advanced systems	ALL
EQPS 5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
EQPS 5.1	**~~General~~ Reaction to limitations**			
APS EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL

APS EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
EQPS 5.2	**Communication equipment degradation**			
APS EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground-air and landline communications*	APP ACP APS ACS
APS EQPS 5.2.2	Apply ~~Integrate~~ contingency procedures in the event of communication equipment degradation.	4->3	Procedures for total or partial degradation of ground-air and landline communications, alternative methods of transferring data	APP ACP APS ACS
EQPS 5.3	**Navigational equipment degradation**			
APS EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: VOR, navigational aids*	ALL
APS EQPS 5.3.2	Apply ~~Integrate~~ contingency procedures in the event of a navigational equipment degradation.	4->3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	ADI APP ACP APS ACS
EQPS 5.4	**Surveillance equipment degradation**			
APS EQPS 5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, loss of certain facilities, total failure	APS ACS
APS EQPS 5.4.2	Apply ~~Integrate~~ contingency procedures in the event of surveillance equipment degradation.	4->3	*Optional content: inform adjacent sectors, inform aircraft, apply vertical separation (emergency, ~~increased~~), increased ~~radar~~ horizontal separation, reduce the number of aircraft entering area of responsibility, transfer aircraft to another unit*	APS ACS
EQPS 5.5	**ATC processing system degradation**			
APS EQPS 5.5.1	Identify a processing system degradation.	3	*Optional content: FDPS, ~~R~~SDPS, software processing of situation display*	APS ACS
APS EQPS 5.5.2	Apply ~~Integrate~~ contingency procedures in the event of a processing system degradation.	4->3		APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

The ~~general~~ subject objective is:

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

PEN 1	**FAMILIARISATION ~~PROFESSIONAL ENVIRONMENT~~**			
PEN 1.1	**Study visit to approach control unit**			
APS PEN 1.1.1	Appreciate the functions and provision of an operational approach control service.	3	Study visit to an approach control unit	APP APS
PEN 2	**AIRSPACE USERS**			
PEN 2.1	**Contributors to civil ATS operations**			
APS PEN 2.1.1 1.1.1	Characterise civil ~~and military~~ ATS activities in approach control unit.	2	Study visit to an approach control unit *Optional content: Familiarisation visits to ~~e.g.~~ TWR, ~~APP,~~ ACC, AIS, RCC~~, Air Defence Units~~*	APP APS
APS PEN 2.1.2 1.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to ~~e.g.~~ engineering services, fire and emergency services, airline operations offices*	ALL
PEN 2.2	**Contributors to military ATS operations**			
APS PEN 2.2.1 1.1.1	Characterise ~~civil and~~ military ATS activities.	2	*Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
PEN 3	**CUSTOMER RELATIONS**			
PEN 3.1	**~~Customer relations~~ Provision of services and user requirements**			
APS PEN 3.1.1 1.2.1	Identify the role of ATC as a service provider. ~~and the requirements of the ATS users.~~	3	~~*Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*~~	ALL
APS PEN 3.1.2 1.2.1	Appreciate ATS users requirements.	3		ALL
PEN 4	**ENVIRONMENTAL PROTECTION**			
PEN 4.1	**Environmental protection**			
APS PEN 4.1.1	Describe the environmental constraints on aerodrome operations.	2	*Optional content: ICAO Circular 303 - Operational opportunities to minimise fuel use and reduce emissions*	ADV ADI APP APS

APS PEN 4.1.2 1.3.1	Explain the use of Collaborative Environmental Management (CEM) process at airports. ~~Describe processes used to ensure environmental protection.~~	2	~~*Optional content: night curfews, relations with local community, relations with environmental associations, relevant administrations*~~	ADV ADI APP APS
APS PEN 4.1.3	Appreciate the mitigation techniques used to minimise aviation's impact on the environment.	3	*Optional content: continuous descent operations (CDO), noise abatement procedures, noise preferential routes, flight efficiency*	APP APS

Subject 10: ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS

The ~~general~~ subject objective is:

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

ABES 1	**~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS (ABES)**			
ABES 1.1	**~~General~~ Overview of ABES**			
APS ABES 1.1.1	List common ~~unusual/degraded/~~abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure, unreliable instruments, runway incursion*	ALL
APS ABES 1.1.2 4.1.2 ACFT	Identify potential or actual abnormal and emergency situations.	3		ALL
APS ABES 1.1.3 1.1.2	Take into account the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
APS ABES 1.1.4 1.1.3	Take into account that procedures do not ~~don't~~ exist for all ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: real life examples*	ALL
APS ABES 1.1.5 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL
ABES 2	**SKILLS IMPROVEMENT**			
ABES 2.1	**Communication effectiveness**			
APS ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, silence instruction	ALL
APS ABES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
ABES 2.2	**Avoidance of mental overload**			
APS ABES 2.2.1	Describe actions to keep ~~the~~ control of the situation.	2	*Optional content: sector splitting, holding, flow management, task delegation*	ALL
APS ABES 2.2.2	Organise priority of actions.	4		ALL
APS ABES 2.2.3	Ensure ~~an~~ effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL

APS ABES 2.2.4	Consider asking for help.	2		ALL
ABES 2.3	**Air / ground cooperation**			
APS ABES 2.3.1	Collect appropriate information relevant ~~for~~ to the situation.	3		ALL
APS ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
ABES 3	**PROCEDURES FOR ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS**			
ABES 3.1	**~~General~~ Application of procedures for ABES**			
APS ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ALL
ABES 3.2	**Radio failure**			
APS ABES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 *Optional content: military procedures*	ALL
APS ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*Optional content: prolonged loss of communication*	ALL
ABES 3.3	**Unlawful interference and aircraft bomb threat**			
APS ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
ABES 3.4	**Strayed or unidentified aircraft**			
APS ABES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
APS ABES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
ABES 3.5	**Diversions**			
APS ABES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS
ABES 3.6	**Transponder failure**			

APS ABES 3.6.1	Apply procedures in the event of an SSR transponder failure.	3	ICAO Doc 4444, ICAO Doc 7030 *Optional content: total/partial failure, impact on ADS-B/Mode S capability*	APS ACS

Subject 11: AERODROMES

The ~~general~~ subject objective is:

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

AGA 1	**~~GENERAL~~ AERODROME DATA, LAYOUT AND COORDINATION**			
AGA 1.1	**Definitions**			
APS AGA ~~1.1.1~~	~~Describe the general layout of an aerodrome with a single runway and multiple runways.~~	2	~~ICAO Annex 14~~ ~~*Optional content: AIP*~~	APP APS ADV ADI
APS AGA 1.1.1 1.1.2	Define aerodrome data.	1	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~ *Optional content: aerodrome elevation, reference point, apron, movement area, manoeuvring area, hot spot*	ADV ADI APP APS
AGA 1.2	**Coordination**			
APS AGA 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, Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	APP APS ADV ADI
AGA 2	**MOVEMENT AREA**			
AGA 2.1	**Movement area**			
APS AGA 2.1.1	Describe movement area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
APS AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, signs on pavement, lights	ADV ADI APP APS
APS AGA 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
AGA 2.2	**Manoeuvring area**			

APS AGA 2.2.1	Describe manoeuvring area.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADV ADI APP APS
APS AGA 2.2.2	Describe taxiway.	2		ADV ADI APP APS
APS AGA 2.2.3	Describe the daylight marking on taxiways.	2		ADV ADI APP APS
APS AGA 2.2.4	Describe taxiway lighting.	2		ADV ADI APP APS
AGA 2.3 Runways				
APS AGA 2.3.1	Describe runway.	2	Runway, runway surface, runway strip, shoulder, runway end safety areas, clearways, stopways	ADV ADI APP APS
APS AGA 2.3.2	Describe instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	ADI APP APS
APS AGA 2.3.3	Describe non-instrument runway.	2	Regulation (EU) No 139/2014 - EASA ED Decision 2014/013/R for CS-ADR-DSN - Initial issue and EASA ED Decision 2014/012/R for ADR AMC/GM ~~ICAO Annex 14~~	*ADV* ADI APP APS
APS AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA	*ADV* ADI APP APS
APS AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements	*ADV* ADI APP APS
APS AGA 2.3.6	Describe the daylight markings on runways.	2	*Optional content: runway designator, centre line, threshold, aiming point, fixed distance, touchdown zone, side strip, colour*	*ADV* ADI APP APS
APS AGA 2.3.7	Describe runway lights.	2	*Optional content: colour, centre line, intensity, edge, touchdown zone, threshold, barettes*	*ADV* ADI APP APS
APS AGA 2.3.8	Explain the functions of visual landing aids.	2	*Optional content: AVASI, VASI, PAPI*	*ADV* ADI APP APS
APS AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, stroboscopic lights, colours, intensity and brightness	*ADV* ADI APP APS

APS AGA 2.3.10	Characterise the effect of water/ice on runways.	2		*ADV* ADI APP APS
APS AGA 2.3.11	Explain braking action.	2	Braking action coefficient	*ADV* ADI APP APS
APS AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation	2		*ADV* ADI APP APS

AGA 3 OBSTACLES

AGA 3.1 ~~General~~ Obstacle-free airspace around aerodromes

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

AGA 4 MISCELLANEOUS EQUIPMENT

AGA 4.1 Location

APS AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	*Optional content: LLZ, GP~~LD~~, VDF, radio communication or ~~radar~~ ATS surveillance systems sensors ~~antennas~~, stopbars, AVASI, VASI, PAPI*	ADV ADI APP APS

AMC1 to Appendix 8 of ANNEX I — PART-ATCO

Area Control Surveillance Rating (ACS)

This document has been provided to help users make a comparison between the content of the AMCs included in the Appendix to Annex I to Decision 2015/010/R and the corresponding content of the Annexes to the EUROCONTROL Specification for the ATCO Common Core Content Initial Training V1.0 (21.10.2008).

Spec V1.0 -> IR TRACK CHANGES FILE

To decode the changes the following conventions have been used:
Deleted information is shown with the ~~strikethrough effect~~
Relocated information is shown with the ~~strikethrough effect~~
New information is shown in blue text.
When an existing objective has been relocated (and consequently renumbered) the new number is shown in black to the left of the objective and the original number in red below the new one.

3.2.1 - current objective number

3.3.3 - old objective number that may have an additional subject indication if moved from one subject to another or B(asic) and R(ating) if moved from one syllabus to another

1.5.3 - new objective number for relocated objectives at its original location that may have an additional indication of a new subject or B(asic) and R(ating) if moved from one syllabus to another

TABLE OF CONTENTS

Subject 1 : INTRODUCTION TO THE COURSE

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

INTR 1	**COURSE MANAGEMENT**			
INTR 1.1	**Course introduction**			
ACS INTR 1.1.1	Explain the aims and main objectives of the course.	2		ALL
INTR 1.2	**Course administration**			
ACS INTR 1.2.1	State course administration.	1		ALL
INTR 1.3	**Study material and training documentation**			
ACS INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	*Optional content: training documentation, library, CBT library, web, learning management server*	ALL
ACS INTR 1.3.2	Integrate appropriate information into course studies.	4	Training documentation *Optional content: ~~Training documentation~~, supplementary information, library*	ALL
INTR 2	**INTRODUCTION TO THE ATC TRAINING COURSE**			
INTR 2.1	**Course content and organisation**			
ACS INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, practical training, self-study, types of training events	ALL
ACS INTR 2.1.2	State the subjects of the course and their purpose.	1		ALL
ACS INTR 2.1.3	Describe the organisation of theoretical training.	2	*Optional content: course programme*	ALL
ACS INTR 2.1.4	Describe the organisation of practical training.	2	*Optional content: PTP, simulation, briefing, debriefing, course programme*	ALL
INTR 2.2	**Training ethos**			
ACS INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, assessment, briefing, debriefing, learner/instructor feedback, instructor/instructor feedback	ALL
INTR 2.3	**~~The~~ Assessment process**			
ACS INTR 2.3.1	Describe the assessment process.	2		ALL

Subject 2 : AVIATION LAW

The ~~general~~ subject 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.

LAW 1	**ATCO LICENSING / CERTIFICATE OF COMPETENCE**			
LAW 1.1	**Privileges and conditions**			
ACS LAW 1.1.1	Appreciate the conditions which ~~must~~ shall be met to ~~for the~~ issue an ~~of~~ Area Control Surveillance rating ~~with Radar endorsement~~ .	3	~~EU Community air traffic controller licence Directive,~~ Regulation (EU) 2015/340 on ATCO Licences, ~~ESARR5 rating, valid rating~~ *Optional content: National documents, ~~European Manual of Personnel Licensing - Air Traffic Controllers~~*	ACS
ACS LAW 1.1.2 6.1.1 HUM	Explain how to maintain and update professional knowledge and skills to retain competence in the operational environment.	2		ALL
ACS LAW 1.1.3 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	~~Incident/Accident, Competence in doubt, Medical,~~ Regulation (EU) 2015/340 on ATCO Licences	ALL
LAW 2	**RULES AND REGULATIONS**			
LAW 2.1	**Reports**			
ACS LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report *Optional content: routine air reports, breach of regulations, watch/log book, records*	ALL
ACS LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	~~ESARR 2~~, Reporting culture, air traffic incident report *Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2*	ALL
ACS LAW 2.1.3	Use forms for reporting.	3	Regulation (EU) No 376/2014, air traffic incident reporting form(s) *Optional content: ~~ICAO Doc 4444 Appendix 4~~, routine air reports, breach of regulations, watch/log book, records*	ALL
LAW 2.2	**Airspace**			
ACS LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Area Control Surveillance rating ~~with Radar endorsement~~ operations.	3		ACS

ACS LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	*Optional content: Regulation (EU) No 923/2012, ICAO Annex 2, ICAO Annex 11, international requirements, civil requirements, military requirements, areas of responsibility, sectorization, national requirements*	ALL
ACS LAW 2.2.3	Appreciate responsibility for terrain clearance.	3		ALL
LAW 3 ATC SAFETY MANAGEMENT				
LAW 3.1 ~~Experience~~ Feedback process				
ACS LAW 3.1.1 10.1.1 HUM	State the importance of ~~the~~ controller~~s~~ contribution to the ~~experience~~ feedback process.	1	*Optional content: voluntary reporting*	ALL
ACS LAW 3.1.2 10.1.2 HUM	Describe how reported occurrences are analysed.	2	*Optional content: ESARR 2, local procedures*	ALL
ACS LAW 3.1.3 10.1.3 HUM	Name the means used to disseminate recommendations.	1	*Optional content: safety letters, safety boards web pages*	ALL
ACS LAW 3.1.4 10.1.4 HUM	Appreciate ~~Explain~~ the 'Just Culture' concept.	2->3	Benefits, prerequisites, constraints *Optional content: EAM 2 GUI 6, GAIN Report*	ALL
LAW 3.2 Safety Investigation ~~Branch~~				
ACS LAW 3.2.1 10.2.1 HUM	Describe role and mission of Safety Investigation ~~Branch~~ in the improvement of safety.	2		ALL
ACS LAW 3.2.2 10.2.2 HUM	Define working methods of Safety Investigation ~~Branch~~.	1		ALL

Subject 3 : AIR TRAFFIC MANAGEMENT

The ~~general~~ subject objective is:

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

ATM 1	**PROVISION OF SERVICES ~~AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT~~**			
ATM 1.1	**Air traffic control (ATC) service**			
ACS ATM 1.1.1 1.1.2	Appreciate own area of responsibility.	3		APP ACP APS ACS
ACS ATM 1.1.2 1.1.1	Provide ~~the appropriate~~ ~~ATC~~ area control service.	4	Regulation (EU) No 923/2012, ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, operation manuals	ACP ACS
ATM 1.2	**Flight information service (FIS)**			
ACS ATM 1.2.1 1.2.2	Provide FIS.	4	ICAO Doc 4444 *Optional content: national documents*	*ALL*
ACS ATM 1.2.2 1.2.3	Use ~~radar~~ ATS surveillance system for the provision of FIS.	3	ICAO Doc 4444, information to identified aircraft concerning: traffic, navigation *Optional content: weather*	APS ACS
ACS ATM 1.2.3 1.2.1	Issue ~~Relay~~ appropriate information concerning the location of ~~other~~ conflicting traffic.	3	ICAO Doc 4444, traffic information, essential traffic information	APS ACS *APP ACP*
ATM 1.3	**Alerting service (ALRS)**			
ACS ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444 *Optional content: national documents*	ALL
ACS ATM 1.3.2	Respond to distress and urgency messages and signals.	3	Regulation (EU) No 923/2012, ICAO Annex 10, ICAO Doc 4444, *Optional content: EUROCONTROL Guidelines for Controller Training in the Handling of Unusual/Emergency Situations*	ALL
ACS ATM 1.3.3	Use ~~radar~~ ATS surveillance system for the provision of ALRS.	3		APS ACS
ATM 1.4	**ATS System capacity and air traffic flow management**			
ACS ATM 1.4.1	Appreciate principles of ~~ATFM~~ ATS system capacity and air traffic flow management.	3	*Optional content: EUROCONTROL ATFCM Users Manual ~~Working principles of ATFM,~~ FABs, FUA, free flight, etc.*	APP ACP APS ACS

ACS ATM 1.4.2	Apply flow management procedures in the provision of ATC.	3	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
ACS ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	*Optional content: civil and military, controlled, uncontrolled, advisory, restricted, danger, prohibited, special rules, sector boundaries, national boundaries, FIR boundaries, delegated airspace, transfer of control, transfer of communications, en-route, off-route*	APP ACP APS ACS
ACS ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	*Optional content: EUROCONTROL ATFCM Users Manual*	APP ACP APS ACS
ACS ATM 1.4.5	Inform supervisor of situation.	3	*Optional content: abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, unusual meteorological conditions, relevant information like: reported ground-based incidents, forest fire, smoke, oil pollution*	APP ACP APS ACS
ACS ATM 1.4.6	Organise traffic flows and patterns to take account of ATS surveillance system capability.	4	~~*e.g. radar coverage*~~	APS ACS
ATM 1.5	**Airspace management (ASM)**			
ACS ATM 1.5.1	Appreciate the principles and means of ASM.	3	Regulation (EC) No 551/2004, Regulation (EC) 2150/2005, Regulation (EC) No 730/2006 *Optional content: FABs, EUROCONTROL Specification for the application of FUA, ~~ICAO Doc 4444~~, ~~EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA~~, TSAs, CDRs, CBAs*	APP ACP APS ACS
ACS ATM 1.5.2	Organise traffic to take account of ASM.	4	Real-time activation, deactivation or reallocation of airspace *Optional content: CDR, TSA, TRA, CBA*	*APS* ACS
ATM 2	**COMMUNICATION**			
ATM 2.1	**Effective communication**			
ACS ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 *Optional content: ICAO Doc 9432 RTF manual, standard words and phrases as contained in ICAO Annex 10 Vol. 2*	ALL
ACS ATM 2.1.2	Ensure effective ~~Perform~~ communication. ~~effectively.~~	3->4	Communication techniques, readback/verification of readback	ALL

ACS ATM ~~2.1.3~~ 6.1.2 HUM	~~Analyse examples of pilot and controller communication for effectiveness.~~	4		ALL

ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS

ATM 3.1 ATC clearances

ACS ATM 3.1.1	Issue appropriate ATC clearances.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ACS ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4		ALL
ACS ATM 3.1.3	Ensure the agreed course of action is carried out.	4		ALL

ATM 3.2 ATC instructions

ACS ATM 3.2.1	Issue appropriate ATC instructions.	3	ICAO Doc 4444 *Optional content: national documents*	ALL
ACS ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4		ALL
ACS ATM 3.2.3	Ensure the agreed course of action is carried out.	4		ALL

ATM 4 COORDINATION

ATM 4.1 Necessity for coordination

ACS ATM 4.1.1	Identify the need for coordination.	3		ALL

ATM 4.2 Tools and methods for coordination

ACS ATM 4.2.1	Use the available tools for coordination.	3	*Optional content: electronic transfer of flight data, telephone, interphone, intercom, direct speech, radiotelephone (RTF), local agreements, automated system coordination*	ALL

ATM 4.3 Coordination procedures

ACS ATM 4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 *Optional content: release point*	ALL
ACS ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	*Optional content: delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.*	ALL

ACS ATM 4.3.3	Select, after negotiation, an appropriate course of action.	5	~~When additional traffic cannot be accepted by adjacent position/unit ,~~ ~~When additional traffic cannot be accepted by own position/unit, etc.~~	ALL
ACS ATM 4.3.4	Ensure the agreed course of action is carried out.	4		ALL
ACS ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
ACS ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
ATM 5	**ALTIMETRY AND LEVEL ALLOCATION**			
ATM 5.1	**Altimetry**			
ACS ATM 5.1.1	Allocate levels ~~(height, altitude, flight level)~~ according to altimetry data.	4	ICAO Doc 8168, ICAO Doc 4444	ALL
ACS ATM 5.1.2	Ensure separation according to altimetry data.	4	*Optional content: transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries*	ALL
ATM 5.2	**Terrain clearance**			
ACS ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	*Optional content: minimum vectoring altitude, terrain clearance dimensions, minimum safe altitudes, transition level, minimum flight level, minimum sector altitude*	APS ACS
ATM 6	**SEPARATIONS**			
ATM 6.1	**Vertical separation**			
ACS ATM 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, holding pattern	ACP ACS
ACS ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 *Optional content: level allocation, during climb/descent, rate of climb/descent*	APP ACP APS ACS
ACS ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS
ACS ATM 6.1.4	Provide vertical separation in a surveillance environment.	4	Pressure altitude-derived information, pilot level reports *Optional content: into/out of ATS surveillance system coverage*	APS ACS

ATM 6.2	**Longitudinal ~~Horizontal~~ separation in a surveillance environment**			
ACS ATM 6.2.1	Provide longitudinal separation in a surveillance environment.	4	Successive departures, successive arrivals, overflights, speed control, Mach number techniques, silent ~~radar~~ transfer, ICAO Doc 4444 ~~*Optional content: Within ATS surveillance system coverage*~~	ACS
ATM 6.3	**Wake turbulence distance-based separation**			
ACS ATM 6.3.1	Provide distance-based wake turbulence separation.	4	ICAO Doc 4444 *Optional content: national documents*	*APS* ACS
ATM 6.4	**~~Radar~~ Separation based on ATS surveillance systems**			
ACS ATM 6.4.1	Describe how separation based on ATS surveillance systems is applied.	2	ICAO Doc 4444	*APS* ACS
ACS ATM 6.4.2	Provide ~~radar~~ horizontal separation.	4	ICAO Doc 4444, ICAO Doc 7030, local operation manuals, holding	*APS* ACS
ACS ATM 6.4.3	Provide ~~radar~~ horizontal separation by vectoring in a variety of situations.	4	*Optional content: transit, meteorological phenomena, vectoring for approach, departure vs transit vs arrival*	*APS* ACS
ACS ATM 6.4.4	Ensure horizontal or vertical separation from airspace boundaries.	4	Adjacent sectors, PRD, TSAs	*APS* ACS
ATM 7	**AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS**			
ATM 7.1	**Airborne collision avoidance systems**			
ACS ATM 7.1.1 7.1.6 B	Differentiate between ACAS advisory thresholds and ~~ATC~~ separation standards applicable in the area control environment.	2	ICAO Doc 9863 *Optional content: EUROCONTROL ACAS web page*	ACP ACS
ACS ATM 7.1.2 7.1.4 B	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444	ALL
ACS ATM 7.1.3 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, TAWS *Optional content: ~~GPWS~~ EUROCONTROL ACAS web page*	ALL
ATM 7.2	**Ground-based safety nets**			
ACS ATM 7.2.1	Describe the controller responsibility during and following safety net warnings.	2	ICAO Doc 4444 *Optional content: STCA, MSAW, APW, APM*	APS ACS

ACS ATM 7.2.2 7.2.1	Respond to ground-based safety nets warnings.	3	*Optional content: STCA, MSAW, APW, APM*	APS ACS

ATM 8 DATA DISPLAY

ATM 8.1 Data management

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

ATM 9 OPERATIONAL ENVIRONMENT (SIMULATED)

ATM 9.1 Integrity of the operational environment

ACS ATM 9.1.1	Obtain information concerning the operational environment.	3	*Optional content: briefing, notices, local orders, verification of information*	ALL
ACS ATM 9.1.2	Ensure the integrity of the operational environment.	4	*Optional content: integrity of displays, verification of the information provided by displays, etc.*	APP ACP APS ACS

ATM 9.2 Verification of the currency of operational procedures

ACS ATM 9.2.1	Check all relevant documentation before managing traffic.	3	*Optional content: briefing, LOAs, NOTAM, AICs*	ALL
ACS ATM 9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS

ATM 9.3 Handover-takeover

ACS ATM 9.3.1	Transfer information to the relieving controller.	3		ALL

ACS ATM 9.3.2	Obtain information from the controller handing over.	3		ALL

ATM 10 PROVISION OF CONTROL SERVICE

ATM 10.1 Responsibility and processing of information

ACS ATM 10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444	*ALL*
ACS ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444 *Optional content: ICAO Doc 9554*	*ALL*
ACS ATM 10.1.3 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444	APP ACP APS ACS
ACS ATM 10.1.4 10.1.3	Obtain operational information.	3	ICAO Doc 4444, local operation manuals	APP ACP APS ACS
ACS ATM 10.1.5 10.1.4	Interpret operational information.	5		APP ACP APS ACS
ACS ATM 10.1.6 10.1.5	Organise forwarding of operational information.	4	*Optional content: including the use of backup procedures*	APP ACP APS ACS
ACS ATM 10.1.7 10.1.6	Integrate operational information into control decisions.	4		APP ACP APS ACS
ACS ATM ~~10.1.7~~ 10.3.6	~~Ensure an adequate priority of actions.~~	4	~~Formal and situational requirements, workload~~	APP ACP APS ACS
ACS ATM 10.1.8 3.5.1 ACFT	Appreciate the influence of operational requirements.	3	*Optional content: military flying, calibration flights, Aerial photography*	ALL
ACS ATM ~~10.1.8~~ 10.4.2	~~Balance the workload with the traffic demand against personal capacity.~~	5	~~*e.g. in own sector, in adjacent sectors*~~	APP ACP APS ACS

ATM 10.2 ATS surveillance service ~~with Radar~~

ACS ATM 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

ACS ATM 10.2.2	Explain the functions that may be performed with the use of ~~radar~~-ATS surveillance systems derived information presented on a situation display.	2	ICAO Doc 4444	*APS* ACS
ACS ATM 10.2.3	Provide planning, coordination and control actions appropriate to the VFR and IFR in VMC and IMC.	4	Regulation (EU) No 923/2012, ~~ICAO Annex 2,~~ ICAO Annex 11, ICAO Doc 4444	ACS *ACP*
ACS ATM 10.2.4	Apply the procedures for termination of ATS surveillance service.	3	ICAO Doc 4444 *Optional content: transfer of control, termination or interruption of ATS surveillance service*	APS ACS
ATM 10.3 Traffic management process				
ACS ATM 10.3.1	Ensure that situational awareness is maintained.	4	Information gathering, scanning, traffic projection	APS ACS
ACS ATM 10.3.2	Detect conflicts in time for appropriate resolution.	4		ALL
ACS ATM 10.3.3	Identify potential solutions to achieve a safe and effective traffic flow.	3		APP ACP APS ACS
ACS ATM 10.3.4	Evaluate possible outcomes of different planning and control actions.	5		APP ACP APS ACS
ACS ATM 10.3.5	Select an appropriate plan in time to achieve safe and effective traffic flow.	5		APP ACP APS ACS
ACS ATM 10.3.6 10.1.7	Ensure an adequate priority of actions.	4	~~Formal and situational requirements, workload~~	*ALL*
ACS ATM 10.3.7	Execute selected plan in a timely manner.	3		APP ACP APS ACS
ACS ATM 10.3.8	Ensure a safe and efficient outcome is achieved.	4	Traffic monitoring, adaptability and follow up	ALL
ATM 10.4 Handling traffic ~~Vectoring~~				
ACS ATM 10.4.1	Manage arrivals, departures and overflights.	4		APP ACP APS ACS
ACS ATM 10.4.2 10.1.8	Balance the workload ~~with the traffic demand~~ against personal capacity.	5	*Optional content: ~~in own sector, in adjacent sectors~~ re-routing, re-planning, prioritising solutions, denying requests, delegating responsibility for separation*	APP ACP APS ACS

ACS ATM 10.4.3 10.3.1	Define flight path monitoring and vectoring.	1	ICAO Doc 4444	APS ACS
ACS ATM 10.4.4 10.3.2	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444	APS ACS
ACS ATM 10.4.5 10.3.3	Provide vectoring.	4	ICAO Doc 4444 *Optional content: separation, expediting arrivals, departures and/or climb to cruising levels, aircraft leaving the hold, navigation assistance, uncontrolled airspace, etc.*	APS ACS
ACS ATM 10.4.6 10.3.4	Apply the procedures for termination of vectoring.	3	ICAO Doc 4444	APS ACS
ATM 10.5 Control service with advanced system support				
ACS ATM 10.5.1 10.4.1	Appreciate ~~Explain~~ the impact of advanced systems on the provision of area control service.	?	*Optional content: sequencing systems, automated holding lists, vertical traffic displays, conflict detection and decision making tools, automated information and coordination tools*	ACS
ATM 11 HOLDING				
ATM 11.1 General holding procedures				
ACS ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
ACS ATM 11.1.2	Appreciate the factors affecting holding patterns. ~~effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.~~	3	Effect of speed, effect of level used, effect of navigation aid in use, turbulence, aircraft type	APP ACP APS ACS
ATM ~~11.2~~ ~~Vertical separation~~				
ACS ATM ~~11.2.1~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern.~~	4		APP ACP APS ACS
ACS ATM ~~11.2.2~~ 6.1.1	~~Provide vertical separation between aircraft in a holding pattern and other aircraft.~~	4		APP ACP APS ACS
ATM 11.2 Holding aircraft				
ACS ATM 11.2.1 11.3.1	Calculate expected onward clearance times.	3		ACP ACS
ATM 11.3 Holding in a surveillance environment				

ACS ATM ~~11.4.1~~ 10.4.5	~~Provide vectors to aircraft leaving a holding pattern.~~	4		APS ACS
ACS ATM 11.3.1 11.4.2	Organise traffic to separate other aircraft from holding aircraft.	4		APS ACS
ACS ATM ~~11.4.3~~ 12.3.1	~~Ensure identity of aircraft leaving a holding pattern.~~	4		APS ACS
ACS ATM 11.3.2 11.4.4	Integrate system support, when available.	4	*Optional content: arrival management system, automated holding lists, vertical traffic displays*	APS ACS
ATM 12 IDENTIFICATION				
ATM 12.1 Establishment of identification				
ACS ATM 12.1.1 12.1.2	Appreciate the precautions when establishing identification.	3	~~ICAO Doc 4444, SSR~~ ~~*Optional content: PSR*~~	APS ACS
ACS ATM ~~12.1.1~~ 12.1.1 9.4.2 ATMB	~~Apply the methods of establishing identification.~~	3	~~ICAO Doc 4444, SSR~~ ~~*e.g. PSR*~~	APS ACS
ACS ATM 12.1.2	Identify aircraft.	3	*Optional content: PSR, SSR or ADS identification method*	APS ACS
ACS ATM 12.1.3	Apply procedures in the case of misidentification.	3		APS ACS
ATM 12.2 Maintenance of identification				
ACS ATM 12.2.1	Appreciate the necessity to maintain identification.	3		APS ACS
ATM 12.3 Loss of identity				
ACS ATM 12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	*Optional content: out of ~~radar~~ ATS surveillance system coverage, ~~loss~~ failure of ATS surveillance system ~~service~~, weather clutter, other clutter, garbling, holding, etc.*	APS ACS
ACS ATM 12.3.2	Apply methods to re-establish identification.	3		APS ACS
ACS ATM 12.3.3	Respond to loss/doubt concerning identification.	3	*Optional content: procedural separation*	APS ACS

ATM 12.4 Position information				
ACS ATM 12.4.1	Appreciate the circumstances when position information should be passed to the aircraft.	3		APS ACS
ACS ATM 12.4.2	State the format in which position information can be passed to aircraft.	1	ICAO Doc 4444	APS ACS
ATM 12.5 Transfer of identity				
ACS ATM 12.5.1	Apply the methods of transfer of identification.	3		APS ACS
ACS ATM 12.5.2	Appreciate the precautions when transferring identification.	3		APS ACS

Subject 4 : METEOROLOGY

The ~~general~~ subject objective is:

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

MET 1	**METEOROLOGICAL PHENOMENA**			
MET 1.1	**Meteorological phenomena**			
ACS MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, icing, jet streams, clear air turbulence (CAT), turbulence, microburst, severe mountain waves, line squalls, volcanic ash *Optional content: ~~Volcanic ash~~ solar radiation*	ACP ACS
ACS MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	Clearances, instructions and transmitted information *Optional content: relevant meteorological phenomena ~~Separation, holding, diversions, re-routings, etc.~~*	*ALL*
ACS MET ~~1.1.3~~ 1.1.2	~~Integrate data about meteorological phenomena into clearances, instructions and transmitted information.~~	4	~~*Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash*~~	APP ACP APS ACS
ACS MET 1.1.3 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Re-routing, level change, etc.	APP ACP APS ACS
MET 2	**SOURCES OF METEOROLOGICAL DATA**			
MET 2.1	**Sources of meteorological information**			
ACS MET 2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET *Optional content: AIREP/AIREP Special*	APP ACP APS ACS
ACS MET 2.1.2	Relay meteorological information.	3	ICAO Doc 4444 ~~To: aircraft, MET office~~ *Optional content: flight information centre, adjacent ATS unit*	*ALL*

Subject 5 : NAVIGATION

The ~~general~~ subject objective is:

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

NAV 1	**MAPS AND AERONAUTICAL CHARTS**			
NAV 1.1	**Maps and charts**			
ACS NAV 1.1.1	Use relevant maps and charts.	3		*APP* ACP *APS* ACS
NAV 2	**INSTRUMENT~~AL~~ NAVIGATION**			
NAV 2.1	**Navigational systems**			
ACS NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	*Optional content: limitations, status of ground-based and satellite-based systems*	APP ACP APS ACS
ACS NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	*Optional content: limitations, status, degraded procedures*	*ALL*
NAV 2.2	**Navigational assistance**			
ACS NAV 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	*Optional content: nearest most suitable aerodrome, track, heading, distance, aerodrome information, any other navigational assistance relevant at the time*	*APP* ACP *APS* ACS
ACS NAV 2.2.2	Assist aircraft in navigation when required.	3	Aircraft observed to be deviating from its known intended route, on request	*APS* ACS
NAV 2.3	**PBN applications**			
ACS NAV 2.3.1	State the navigation applications used in terminal and en-route environments.	1	Terminal-RNAV-1 (≈P-RNAV); En-route-RNAV-5 (B-RNAV) *Optional content: A-RNP, EC PBN Implementing Rule , ICAO Doc 9613*	ACP ACS
ACS NAV 2.3.2	Explain the principles and designation of navigation specifications in use.	2	*Optional content: performance, functionality, sensors, aircrew and controller requirements*	*APP* ACP *APS* ACS
ACS NAV 2.3.3	State future PBN developments.	1	A-RNP, APV *Optional content: RNP 3D, RNP 4D*	*ADI* *APP* ACP *APS* ACS

Subject 6 : AIRCRAFT

The ~~general~~ subject objective is:

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

ACFT 1	**AIRCRAFT INSTRUMENTS**			
ACFT 1.1	**Aircraft instruments**			
ACS ACFT 1.1.1	Integrate ~~the~~ information ~~indication~~ from aircraft instruments provided by the pilot in the provision of ATS.	4	~~*Optional content: TCAS, wind shear indicator, weather radar*~~	ALL
ACS ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	*Optional content: radios (number of), emergency radios, ~~SELCAL~~*	ALL
ACS ACFT 1.1.3	Explain the operation of ~~transponder~~ on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability	ADI APS ACS
ACS ACFT ~~1.1.4~~	~~Explain the use and benefits of CPDLC.~~	2		ALL
ACFT 2	**AIRCRAFT CATEGORIES**			
ACFT 2.1	**Wake turbulence ~~categories~~**			
ACS ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2		ALL
ACS ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3		ALL
ACFT 3	**FACTORS AFFECTING AIRCRAFT PERFORMANCE**			
ACFT 3.1	**Climb factors**			
ACS ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	*Optional content: speed, mass, air density, cabin pressurisation, wind and temperature*	APP ACP APS ACS
ACFT 3.2	**Cruise factors**			
ACS ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation	APP ACP APS ACS
ACFT 3.3	**Descent factors**			
ACS ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	*Optional content: wind, speed, rate of descent, cabin pressurisation*	ACP ACS
ACFT 3.4	**Economic factors**			

ACS ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	*Optional content: routing, level, speed, rate of climb and rate of descent, approach profile, top of descent*	ACP ACS
ACS ACFT 3.4.2	Use continuous climb techniques where applicable.	3		*APP* ACP *APS* ACS
ACS ACFT 3.4.3	Use direct routing where applicable.	3		*APP* ACP *APS* ACS
ACFT ~~3.5~~ ~~Miscellaneous factors~~				
ACS ACFT ~~3.5.1~~ 10.1.8 ATM	~~Appreciate the influence of operational requirements.~~	3	~~*Optional content: Military flying, Calibration flights, Aerial photography, banner towing*~~	ACP ACS
ACFT 3.5 Environmental factors				
ACS ACFT 3.5.1	Appreciate the performance restrictions due to environmental constraints.	3	*Optional content: fuel dumping, minimum flight levels, continuous descent operations*	ACP ACS
ACFT 4 AIRCRAFT DATA				
ACFT 4.1 Performance data				
ACS ACFT 4.1.1	Integrate the average performance data of a representative sample of aircraft which will be encountered in the operational/working environment into the provision of a control service.	4	Performance data under a representative variety of circumstances	APP ACP APS ACS
ACS ACFT ~~4.1.2~~ 1.1.2 ABES	~~Identify potential or actual emergency situations.~~	3		APP ACP APS ACS

Subject 7 : HUMAN FACTORS

The ~~general~~ subject objective is:

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

HUM 1	**PSYCHOLOGICAL FACTORS**			
HUM 1.1	**Cognitive**			
ACS HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response	ALL
ACS HUM 1.1.2	Describe the factors which influence human information processing.	2	Confidence, stress, learning, knowledge, experience, fatigue, alcohol/drugs, distraction, interpersonal relations	ALL
ACS HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	*Optional content: workload, stress, interpersonal relations, distraction, confidence*	ALL
HUM 2	**MEDICAL AND PHYSIOLOGICAL FACTORS**			
HUM 2.1	**Fatigue**			
ACS HUM 2.1.1	State factors that cause fatigue.	1	Shift work *Optional content: night shifts and rosters*	ALL
ACS HUM 2.1.2	Describe the onset of fatigue.	2	*Optional content: lack of concentration, listlessness, irritability, frustration, ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ACS HUM 2.1.3	Recognise the onset of fatigue in self.	1	*Optional content: ICAO Circular 241 – AN/145 Human factors in Air Traffic Control*	ALL
ACS HUM 2.1.4	Recognise the onset of fatigue in others.	1		ALL
ACS HUM 2.1.5	Describe ~~Consider~~ appropriate action when recognising fatigue.	2		ALL
HUM 2.2	**Fitness**			
ACS HUM 2.2.1	Recognise signs of lack of personal fitness.	1		ALL
ACS HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2		ALL
HUM 3	**SOCIAL AND ORGANISATIONAL FACTORS**			
HUM 3.1	**Team resource management (TRM)**			

ACS HUM 3.1.1	State the relevance ~~objectives~~ of TRM.	1	*Optional content: TRM course, EUROCONTROL Guidelines for the development of TRM training*	ALL
ACS HUM 3.1.2	State the content of the TRM concept.	1	*Optional content: team work, human error, team roles, stress, decision making, communication, situational awareness*	ALL
HUM 3.2	**Teamwork and team roles**			
ACS HUM 3.2.1	Identify reasons for conflict.	3		ALL
ACS HUM 3.2.2	Describe actions to prevent human conflicts.	2	*Optional content: TRM team roles*	ALL
ACS HUM 3.2.3	Describe strategies to cope with human conflicts.	2	*Optional content: in your team, in the simulator*	ALL
HUM 3.3	**Responsible behaviour**			
ACS HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	*Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality*	ALL
ACS HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
HUM 4	**STRESS**			
HUM 4.1	**Stress**			
ACS HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
HUM 4.2	**Stress management**			
ACS HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, the benefits of active stress management	ALL
ACS HUM 4.2.2	Respond to stressful situation by offering, asking or accepting assistance. ~~Obtain assistance in stressful situations.~~	3	*Optional content: the benefits of offering, accepting and asking for help in stressful situations*	ALL
ACS HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, abnormal situations, CISM	ALL
ACS HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
ACS HUM 4.2.5	Explain procedures used following an incident/accident.	2	*Optional content: CISM, counselling, human element*	ALL

HUM 5 HUMAN ERROR				
HUM 5.1 Human error				
ACS HUM 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 *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 5.1.2	Differentiate between the types of error.	2	Slips, lapses, mistakes *Optional content: ~~Slips, Lapses, Mistakes~~ ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 5.1.3	Describe error-prone conditions.	2	*Optional content: increase in traffic, changes in procedures, complexities of systems or traffic, weather, unusual occurrences*	ALL
ACS HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 5.1.6	Execute corrective actions.	3	Error compensation *Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
ACS HUM 5.1.7	Explain the importance of error management.	2	*Optional content: prevention of incidents, safety improvement, revision of procedures and/or working practises*	ALL
ACS HUM 5.1.8	Describe the impact on an ATCO following an occurrence/incident.	2	*Optional content: reporting, SMS, investigation, CISM*	ALL
HUM 5.2 Violation of rules				
ACS HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	*Optional content: ICAO Circular 314 – AN/178 Threat and Error Management (TEM) in Air Traffic Control*	ALL
HUM ~~6~~ ~~WORKING METHODS~~				
HUM ~~6.1~~ ~~Efficiency~~				
ACS HUM ~~6.1.1~~	~~Consider, from a human factors point of view, the factors affecting efficiency in the provision of air traffic control.~~	2	~~*Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety*~~	ALL

HUM 6	**COLLABORATIVE WORK**			
HUM 6.1	**Communication**			
ACS HUM 6.1.1 8.1.1	Use communication effectively in ATC.	3		ALL
ACS HUM 6.1.2 2.1.3 ATM	Analyse examples of pilot and controller communication for effectiveness.	4		ALL
HUM 6.2	**Collaborative work within the same area of responsibility**			
ACS HUM 6.2.1 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	*Optional content: electronic, written, verbal and non-verbal communication*	ALL
ACS HUM 6.2.2 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	*Optional content: strips legibility and encoding, ~~Radar~~ labels designation, feedback*	ALL
ACS HUM 6.2.3 8.2.3	List possible actions to provide a safe position handover.	1	*Optional content: rigour, preparation, overlap time*	ALL
ACS HUM 6.2.4 8.2.4	Explain consequences of a missed position handover process.	2		ALL
HUM 6.3	**Collaborative work between different areas of responsibility**			
ACS HUM 6.3.1 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	*Optional content: other sectors constraints, electronic coordination tools*	ALL
HUM 6.4	**Controller/pilot cooperation**			
ACS HUM 6.4.1 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	*Optional content: workload, mutual knowledge, controller vs pilot mental picture*	ALL
HUM ~~7~~	**~~WORKING KNOWLEDGE~~**			
HUM ~~7.1~~	**~~Controller knowledge~~**			
ACS HUM ~~7.1.1~~ 1.1.2 LAW	~~Explain how to maintain and update professional knowledge to retain competence in the operational environment.~~	2	~~*Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET*~~	ALL
HUM ~~9~~	**~~WORK ENVIRONMENT~~**			
HUM ~~9.1~~	**~~Ergonomics~~**			

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

HUM ~~10~~ ~~ATC SAFETY MANAGEMENT~~

HUM ~~10.1~~ ~~Experience feedback~~

ACS HUM ~~10.1.1~~ 3.1.1 LAW	~~State the importance of the controllers contribution to the experience feedback process.~~	1	~~*Optional content: voluntary reporting*~~	ALL
ACS HUM ~~10.1.2~~ 3.1.2 LAW	~~Describe how reported occurrences are analysed.~~	2	~~*Optional content: ESARR2, local procedures*~~	ALL
ACS HUM ~~10.1.3~~ 3.1.3 LAW	~~Name the means used to disseminate recommendations.~~	1	~~*Optional content: Safety letters, safety boards web pages*~~	ALL
ACS HUM ~~10.1.4~~ 3.1.4 LAW	~~Explain the "Just Culture" concept.~~	2	~~benefits, prerequisites, constraints~~ ~~*Optional content: EAM 2 GUI 6, GAIN Report*~~	ALL

HUM ~~10.2~~ ~~Safety investigation branch~~

ACS HUM ~~10.2.1~~ 3.2.1 LAW	~~Describe role and mission of Safety Investigation Branch in the improvement of safety.~~	2		ALL
ACS HUM ~~10.2.2~~ 3.2.2 LAW	~~Define working methods of Safety Investigation Branch.~~	1		ALL

Subject 8 : EQUIPMENT AND SYSTEMS

The ~~general~~ subject 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.

EQP 1	**VOICE COMMUNICATIONS**			
EQPS 1.1	**Radio communications**			
ACS EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, procedures *Optional content: frequency selection, standby equipment*	ALL
ACS EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	*Optional content: indicator lights, serviceability displays, selector/frequency displays*	ALL
ACS EQPS 1.1.3	Consider radio range.	2	*Optional content: transfer to another frequency, apparent radio failure, failure to establish radio contact, frequency protection range*	APP ACP APS ACS
EQPS 1.2	**Other voice communications**			
ACS EQPS 1.2.1	Operate landline communications.	3	*Optional content: telephone, interphone and intercom equipment*	ALL
EQP 2	**AUTOMATION IN ATS**			
EQPS 2.1	**Aeronautical fixed telecommunication network (AFTN)**			
ACS EQPS 2.1.1	Decode AFTN messages.	3	*Optional content: movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.*	ALL
EQPS 2.2	**Automatic data Interchange**			
ACS EQPS 2.2.1	Use automatic data transfer equipment where available.	3	*Optional content: sequencing systems, automated information and coordination, OLDI*	ADV ADI APS ACS
EQP 3	**CONTROLLER WORKING POSITION**			
EQPS 3.1	**~~General~~ Operation and monitoring of equipment**			
ACS EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, responsibilities	ALL
ACS EQPS 3.1.2	Operate the equipment of the controller working position.	3	*Optional content: situation displays, flight progress board, flight data display, radio, telephone, maps and charts, strip-printer, clock, information systems ~~monitors, (CCIS)~~, UDF/VDF*	ALL
ACS EQPS 3.1.3	Operate ~~all~~ available equipment in ~~unusual/degraded/~~abnormal and emergency situations.	3		ALL

EQPS 3.2	**Situation displays and information systems**			
ACS EQPS 3.2.1	Use situation displays.	3		ALL
ACS EQPS 3.2.2	Check availability of information material.	3		ALL
ACS EQPS 3.2.3	Obtain ~~the~~ information from equipment.	3		APP ACP APS ACS
EQPS 3.3	**Flight data systems**			
ACS EQPS 3.3.1	Use the flight data information at controller working position.	3		ALL
EQPS 3.4	**Use of ~~Radars~~ ATS surveillance system**			
ACS EQPS 3.4.1	Use the ATS surveillance system functions.~~Operate radar equipment.~~	3		APS ACS
ACS EQPS 3.4.2	Analyse the information provided by the ~~radar equipment~~ ATS surveillance system.	4		APS ACS
ACS EQPS 3.4.3	Assign codes.	4		APS ACS
ACS EQPS 3.4.4	Appreciate the use of advanced surveillance technology ~~Mode S~~.	3	*Optional content: Mode S, ADS-B, MLAT*	APS ACS
EQPS 3.5	**Advanced systems**			
ACS EQPS 3.5.1	Appreciate the ~~U~~use of controller pilot datalink communications when available.	3		APS ACS
ACS EQPS 3.5.2	Appreciate the ~~U~~use of ~~the~~ information provided by advanced systems~~, when available~~.	3	*Optional content: trajectory-based information, MTCD, MONA, etc.*	APS ACS
EQP 4	**FUTURE EQUIPMENT**			
EQPS 4.1	**New developments**			
ACS EQPS 4.1.1	Recognise future developments.	1	New advanced systems	ALL
EQP 5	**EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION**			
EQPS 5.1	**~~General~~ Reaction to limitations**			
ACS EQPS 5.1.1	Take account of the limitations of equipment and systems.	2		ALL

ACS EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, responsibilities	ALL
EQPS 5.2	**Communication equipment degradation**			
ACS EQPS 5.2.1	Identify that communication equipment has degraded.	3	*Optional content: ground-air and landline communications*	APP ACP APS ACS
ACS EQPS 5.2.2	Apply ~~Integrate~~ contingency procedures in the event of communication equipment degradation.	4->3	Procedures for total or partial degradation of ground-air and landline communications, alternative methods of transferring data	APP ACP APS ACS
EQPS 5.3	**Navigational equipment degradation**			
ACS EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	*Optional content: VOR, navigational aids*	ALL
ACS EQPS 5.3.2	Apply ~~Integrate~~ contingency procedures in the event of a navigational equipment degradation.	4->3	*Optional content: vertical separation, information to aircraft, navigational assistance, seeking assistance from adjacent units*	ADI APP ACP APS ACS
EQPS 5.4	**Surveillance equipment degradation**			
ACS EQPS 5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, loss of certain facilities, total failure	APS ACS
ACS EQPS 5.4.2	Apply ~~Integrate~~ contingency procedures in the event of surveillance equipment degradation.	4->3	*Optional content: inform adjacent sectors, inform aircraft, apply vertical separation (emergency, ~~increased~~), increased ~~radar~~ horizontal separation, reduce the number of aircraft entering area of responsibility, transfer aircraft to another unit*	APS ACS
EQPS 5.5	**ATC processing system degradation**			
ACS EQPS 5.5.1	Identify a processing system degradation.	3	*Optional content: FDPS, ~~R~~SDPS, software processing of situation display*	APS ACS
ACS EQPS 5.5.2	Apply ~~Integrate~~ contingency procedures in the event of a processing system degradation.	4->3		APS ACS

Subject 9 : PROFESSIONAL ENVIRONMENT

The ~~general~~ subject objective is:

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

PEN 1	**FAMILIARISATION ~~PROFESSIONAL ENVIRONMENT~~**			
PEN 1.1	**Study visit to area control centre**			
ACS PEN 1.1.1	Appreciate the functions and provision of an operational area control service.	3	Study visit to area control centre	ACP ACS
PEN 2	**AIRSPACE USERS**			
PEN 2.1	**Contributors to civil ATS operations**			
ACS PEN 2.1.1 1.1.1	Characterise civil ~~and military~~ ATS activities in area control centre.	2	Study visit to an area control centre *Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ~~ACC,~~ AIS, RCC~~, Air Defence Units~~*	ACP ACS
ACS PEN 2.1.2 1.1.2	Characterise other parties interfacing with ATS operations.	2	*Optional content: familiarisation visits to ~~e.g.~~ engineering services, fire and emergency services, airline operations offices*	ALL
PEN 2.2	**Contributors to military ATS operations**			
ACS PEN 2.2.1 1.1.1	Characterise ~~civil and~~ military ATS activities.	2	*Optional content: Familiarisation visits to ~~e.g.~~ TWR, APP, ACC, AIS, RCC, Air Defence Units*	ALL
PEN 3	**CUSTOMER RELATIONS**			
PEN 3.1	**~~Customer relations~~ Provision of services and user requirements**			
ACS PEN 3.1.1 1.2.1	Identify the role of ATC as a service provider. ~~and the requirements of the ATS users.~~	3	~~*Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators*~~	ALL
ACS PEN 3.1.2 1.2.1	Appreciate ATS users requirements.	3		ALL
PEN 4	**ENVIRONMENTAL PROTECTION**			
PEN 4.1	**Environmental protection**			
ACS PEN 4.1.1 1.3.1	Appreciate the mitigation techniques used en-route to minimise the aviation's impact on the environment. ~~Describe processes used to ensure environmental protection.~~	2	*Optional content: free route airspace (FRA), night/weekend routes ~~curfews, relations with local community, relations with environmental associations, relevant administrations~~* *ICAO Circular 303 - Operational opportunities to minimize fuel use and reduce emissions*	ACP ACS

Subject 10: ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS

The ~~general~~ subject objective is:

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

ABE 1	**~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS (ABES)**			
ABES 1.1	**~~General~~ Overview of ABES**			
ACS ABES 1.1.1	List common ~~unusual/degraded/~~abnormal and emergency situations.	1	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure, unreliable instruments, runway incursion*	ALL
ACS ABES 1.1.2 4.1.2 ACFT	Identify potential or actual abnormal and emergency situations.	3		ALL
ACS ABES 1.1.3 1.1.2	Take into account the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: ICAO Doc 4444*	APP ACP APS ACS
ACS ABES 1.1.4 1.1.3	Take into account that procedures do not ~~don't~~ exist for all ~~unusual/degraded/~~abnormal and emergency situations.	2	*Optional content: real life examples*	ALL
ACS ABES 1.1.5 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	*Optional content: separation, information, coordination*	ALL
ABE 2	**SKILLS IMPROVEMENT**			
ABES 2.1	**Communication effectiveness**			
ACS ABES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, vocabulary, readback, silence instruction	ALL
ACS ABES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444	ALL
ABES 2.2	**Avoidance of mental overload**			
ACS ABES 2.2.1	Describe actions to keep ~~the~~ control of the situation.	2	*Optional content: sector splitting, holding, flow management, task delegation*	ALL
ACS ABES 2.2.2	Organise priority of actions.	4		ALL
ACS ABES 2.2.3	Ensure ~~an~~ effective circulation of information.	4	*Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.*	ALL

ACS ABES 2.2.4	Consider asking for help.	2		ALL
ABES 2.3	**Air / ground cooperation**			
ACS ABES 2.3.1	Collect appropriate information relevant ~~for~~ to the situation.	3		ALL
ACS ABES 2.3.2	Assist the pilot.	3	Pilot workload *Optional content: instructions, information, support, human factors, etc.*	ALL
ABE 3	**PROCEDURES FOR ~~UNUSUAL/DEGRADED/~~ABNORMAL AND EMERGENCY SITUATIONS**			
ABES 3.1	**~~General~~ Application of procedures for ABES**			
ACS ABES 3.1.1	Apply the procedures for given ~~unusual/degraded/~~abnormal and emergency situations.	3	*Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, ~~GPWS~~ ground based safety nets alerts, airframe failure*	ALL
ABES 3.2	**Radio failure**			
ACS ABES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 *Optional content: military procedures*	ALL
ACS ABES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	*Optional content: prolonged loss of communication*	ALL
ABES 3.3	**Unlawful interference and aircraft bomb threat**			
ACS ABES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
ABES 3.4	**Strayed or unidentified aircraft**			
ACS ABES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 *Optional content: inside controlled airspace, outside controlled airspace*	ALL
ACS ABES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444	ALL
ABES 3.5	**Diversions**			
ACS ABES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, distance, other navigational assistance *Optional content: nearest most suitable aerodrome*	APP ACP APS ACS
ABES 3.6	**Transponder failure**			

ACS ABES 3.6.1	Apply procedures in the event of an SSR transponder failure.	3	ICAO Doc 4444, ICAO Doc 7030 *Optional content: total/partial failure, impact on ADS-B/Mode S capability*	APS ACS