



European Aviation Safety Agency

**NOTICE OF PROPOSED AMENDMENT**

**NPA 2012-18 (B.V)**

RMT.0153 & RMT.0154 (ATM.003(a)&(b))

**Licensing and medical certification  
of air traffic controllers**

**NPA 2012-18 (B.V)**

**Acceptable Means of Compliance to Part-ATCO,  
SUBPART D, Section 2 (Initial training)**

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**ANNEX 1 – PART-ATCO**

**SUBPART D – ATCO TRAINING**

**Section 2 – Initial training requirements for Air Traffic Controllers**

**AMC1 to Appendix 3 – Basic training**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. Basic training should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 3 – Basic training**.
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTRB 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTRB 1.1 – Course introduction</b>			
INTRB 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTRB 1.2 – Course administration</b>			
INTRB 1.2.1	State course administration.	1	
<b>Subtopic INTRB 1.3 – Study material and training documentation</b>			
INTRB 1.3.1	Use appropriate documentation and their sources for the course.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
INTRB 1.3.2	Integrate appropriate information into course studies.	4	<b>Training documentation</b> <i>Optional content: supplementary information</i>
<b>TOPIC INTRB 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTRB 2.1 – Course content and organisation</b>			
INTRB 2.1.1	State the different training methods applied in the course.	1	<b>Theoretical training, Practical training, Self-study</b>
INTRB 2.1.2	State the subjects of the course and their purpose.	1	
INTRB 2.1.3	Describe the organisation of theoretical training.	2	
INTRB 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTRB 2.2 – Training ethos</b>			
INTRB 2.2.1	Recognise the feedback mechanisms available.	1	<i>Optional content: Instructor discussions, Training progress, Assessment, Examinations, Results, Briefing, Debriefing</i>
INTRB 2.2.2	Describe the positive effect of working and learning together with fellow course participants.	2	<b>Team work in theoretical and practical training</b>
<b>Subtopic INTRB 2.3 – Assessment process</b>			
INTRB 2.3.1	Describe the assessment process.	2	
<b>TOPIC INTRB 3 INTRODUCTION TO THE ATCO'S FUTURE</b>			
<b>Subtopic INTRB 3.1 – Job prospects</b>			
INTRB 3.1.1	Recognise an ATCO's working environment.	1	<b>Area control unit, approach control unit, aerodrome control unit</b>
INTRB 3.1.2	Recognise career developments.	1	<i>Optional content: OJT instructor, supervisor,</i>

			<i>operational managerial posts, non-operational posts</i>
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## Subject 2: AVIATION LAW

<b>TOPIC LAW 1 INTRODUCTION TO AVIATION LAW</b>			
<b>Subtopic LAW 1.1 - National and international organisations</b>			
LAWB 1.1.1	State the necessity for air law, the sources and development of aviation law.	1	<i>Optional content: Relevant EU legislation, ICAO Annex 2, National Aviation Law</i>
LAWB 1.1.2	Name the key national and international aviation organisations.	1	<i>Optional content: ICAO, ECAC, EASA, EUROCONTROL, National Authority</i>
LAWB 1.1.3	Describe the impact these organisations have on ATC and their interaction with each other.	2	
<b>TOPIC LAW 2 INTERNATIONAL ORGANISATIONS</b>			
<b>Subtopic LAW 2.1 – ICAO</b>			
LAWB 2.1.1	Explain the purpose and function of ICAO.	2	
LAWB 2.1.2	Describe the methods by which ICAO notifies and implements legislation.	2	<i>Optional content: SARPs, PANS, ICAO Annexes, ICAO Documents, regional offices</i>
<b>Subtopic LAW 2.2 – Other agencies</b>			
LAWB 2.2.1	State the purpose and function of other international agencies and their relevance to air traffic operations.	1	<i>Optional content: ECAC, EU, EASA, ITU, EUROCONTROL, SRC/SRU, CANSO</i>
<b>Subtopic LAW 2.3 – Aviation associations</b>			
LAWB 2.3.1	State the purpose of controller, pilot, airline and airspace user associations and their interaction with ATC.	1	<i>Optional content: IFATCA, IFALPA, IATA, AEA, IAOPA, IACA, military services, ETF, ATCEUC</i>
<b>TOPIC LAW 3 NATIONAL ORGANISATIONS</b>			
<b>Subtopic LAW 3.1 – Purpose and function</b>			
LAWB 3.1.1	Describe the purpose and function of appropriate national agencies and their relevance to air traffic operations.	2	<i>Optional content: Civil aviation administration agencies, government agencies</i>
<b>Subtopic LAW 3.2 – National legislative procedures</b>			
LAWB 3.2.1	Describe the means by which legislation is implemented, notified and updated.	2	<b>Relevant EU legislation</b> <i>Optional content: ICAO Annex 15, AIS, AIPs, AICs, AIRAC SUP, NOTAMs, integrated aeronautical information package, national legislation, Letters of Agreement, operations manual</i>
LAWB 3.2.2	Recognise the information contained in the different parts of the AIP.	1	

<b>Subtopic LAWB 3.3 – Competent authority</b>			
LAWB 3.3.1	Name the competent authority responsible for licensing and enforcing legislation and operational procedures.	1	
LAWB 3.3.2	Describe how competent authority carries out its safety regulation responsibilities.	2	
<b>Subtopic LAWB 3.4 – National aviation associations</b>			
LAWB 3.4.1	State the purpose of national controller, pilot, airline and airspace user associations and their interaction with ATC.	1	
<b>TOPIC LAWB 4 SAFETY AND SAFETY CULTURE</b>			
<b>Subtopic LAWB 4.1 – Safety regulation</b>			
LAWB 4.1.1	Describe the need for safety regulation.	2	Regulation (EU) No 216/2008 <i>Optional content: National regulation</i>
LAWB 4.1.2	Describe the general principles of the safety organisation.	2	Safety regulation <i>Optional content: Commission Implementing Regulation (EU) No 1035/2011, national regulation</i>
LAWB 4.1.3	Explain the impact of safety regulation on the controller.	2	<i>Optional content: Commission Regulation (EU) No 805/2011</i>
<b>Subtopic LAWB 4.2 – Safety management system</b>			
LAWB 4.2.1	Explain how a safety management system complies with regulatory requirements.	2	Commission Implementing Regulation (EU) No 1035/2011
LAWB 4.2.2	Describe the safety assessment methodology.	2	Commission Implementing Regulation (EU) No 1035/2011, Commission Implementing Regulation (EU) No 1034/2011 <i>Optional content: EATMP Air navigation system safety assessment methodology, national regulations</i>
<b>TOPIC LAWB 5 RULES AND REGULATIONS</b>			
<b>Subtopic LAWB 5.1 – Units of measurement</b>			
LAWB 5.1.1	Describe the units of measurement used in aviation.	2	ICAO Annex 5
<b>Subtopic LAWB 5.2 – ATCO licensing/certification</b>			
LAWB 5.2.1	Explain the ATCO licensing/certification process.	2	Commission Regulation (EU) No 805/2011, Approved training courses, ATCO licence, ratings and endorsements <i>Optional content: national</i>

			<i>processes</i>
LAWB 5.2.2	Explain the privileges and limitations of controller licences.	2	Commission Regulation (EU) No 805/2011
<b>Subtopic LAWB 5.3 – Overview of ANS and ATS</b>			
LAWB 5.3.1	Differentiate between the Air Navigation Services.	2	ICAO Doc 9161
LAWB 5.3.2	Explain the considerations which determine the need for the ATS.	2	ICAO Annex 11
LAWB 5.3.3	Differentiate between the ATS.	2	ATCS, ADVS, FIS, ALRS
LAWB 5.3.4	Explain the objectives of ATS.	2	ICAO Annex 11
<b>Subtopic LAWB 5.4 – Rules of the air</b>			
LAWB 5.4.1	Explain the Rules of the Air.	2	ICAO Annex 2
LAWB 5.4.2	State any notified differences with ICAO.	1	<i>Optional content: ICAO Doc 7030, Supplements to ICAO Annex 2 and ICAO Annex 11</i>
LAWB 5.4.3	Appreciate the influence of relevant flight rules on ATC.	3	General flight rules, instrument flight rules, visual flight rules
LAWB 5.4.4	Appreciate the differences between flying in accordance with VFR and IFR, in VMC and IMC.	3	ICAO Annex 2
<b>Subtopic LAWB 5.5 – Airspace and ATS routes</b>			
LAWB 5.5.1	Explain airspace classification.	2	ICAO Classes A-G, ICAO Annex 11
LAWB 5.5.2	Differentiate between the different types of airspace.	2	<i>Optional content: Control zones, control areas, airways, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.</i>
LAWB 5.5.3	Differentiate between the different types of ATS routes.	2	Airway, arrival route, departure route, advisory route, controlled route, uncontrolled route, etc.
LAWB 5.5.4	Decode information from aeronautical charts.	3	<i>Optional content: Control zones, control areas, ATS routes, upper and lower airspace, restricted areas, prohibited and danger areas, FIR, aerodrome traffic zone, etc.</i>
<b>Subtopic LAWB 5.6 – Flight plan</b>			
LAWB 5.6.1	Explain the functions of a flight plan.	2	ICAO Doc 4444
LAWB 5.6.2	Explain the different types of flight plans and associated update messages.	2	ICAO Doc 4444
LAWB 5.6.3	Explain the pilot's responsibilities in relation to adherence to flight plan.	2	Inadvertent changes, Intended changes, Position reporting

<b>Subtopic LAWB 5.7 – Aerodromes</b>			
LAWB 5.7.1	Describe the general design and layout of an aerodrome.	2	Runway(s), taxiways, apron, movement area, manoeuvring area, designated positions on an aerodrome
LAWB 5.7.2	Explain the numbering system and orientation of runways.	2	ICAO Annex 14
LAWB 5.7.3	Differentiate between different types of aerodromes.	2	Controlled, uncontrolled <i>Optional content: military, international, regional</i>
LAWB 5.7.4	Describe designated positions in the traffic circuit.	2	
LAWB 5.7.5	List the factors affecting the selection of runway in use.	1	
<b>Subtopic LAWB 5.8 – Holding procedures for IFR flights</b>			
LAWB 5.8.1	Describe types of holding patterns.	2	Published, Non-published, Extended
LAWB 5.8.2	Describe the use of holding.	2	Effect of speed, effect of level used, effect of navigation aid in use, etc.
LAWB 5.8.3	Describe the purpose of holding.	2	Traffic management, weather, ICAO Doc 4444, ICAO Doc 8168
LAWB 5.8.4	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)
<b>Subtopic LAWB 5.9 – Holding procedures for VFR flights</b>			
LAWB 5.9.1	Describe the purpose of VFR holding.	2	
LAWB 5.9.2	Describe the principles of VFR holding.	2	

### Subject 3: AIR TRAFFIC MANAGEMENT

<b>TOPIC ATMB 1 AIR TRAFFIC MANAGEMENT</b>			
<b>Subtopic ATMB 1.1 – Application of units of measurement</b>			
ATMB 1.1.1	Apply the units of measurement appropriate to ATM.	3	
<b>Subtopic ATMB 1.2 – Air traffic control (ATC) service</b>			
ATMB 1.2.1	Define ATC service.	1	ICAO Annex 11
ATMB 1.2.2	Explain the division of the ATC service.	2	ICAO Annex 11
ATMB 1.2.3	Explain the responsibility for the provision of the ATC service.	2	ICAO Annex 11
ATMB 1.2.4	Differentiate between the different methods of ATC service.	2	Aerodrome, surveillance, procedural
<b>Subtopic ATMB 1.3 – Flight information service (FIS)</b>			
ATMB 1.3.1	Define FIS.	1	ICAO Annex 11
ATMB 1.3.2	Describe the scope of the FIS.	2	ICAO Annex 11
ATMB 1.3.3	Explain the responsibility for the provision of the FIS.	2	ICAO Doc 4444
ATMB 1.3.4	State the methods of transmitting information.	1	<i>Optional content: RTF, data link, ATIS, VOLMET, etc.</i>
ATMB 1.3.5	Issue information to aircraft.	3	<i>Optional content: SIGMET, serviceability of nav aids, weather, flight safety information, essential traffic, essential local traffic, information related to aerodrome conditions, etc.</i>
<b>Subtopic ATMB 1.4 – Alerting service</b>			
ATMB 1.4.1	Define ALRS.	1	ICAO Doc 4444
ATMB 1.4.2	Describe the scope of the ALRS.	2	ICAO Annex 11
ATMB 1.4.3	Explain the responsibility for the provision of the ALRS.	2	ICAO Doc 4444
ATMB 1.4.4	Differentiate between the phases of emergency.	2	Uncertainty, alert, distress
ATMB 1.4.5	Describe the organisation of an ALRS.	2	Responsibilities, local organisation
ATMB 1.4.6	Describe the cooperation between units providing the alerting services and the SAR units.	2	
ATMB 1.4.7	Differentiate between distress and urgency signals.	2	<i>Optional content: Mayday, Pan, visual signals, etc.</i>
<b>Subtopic ATMB 1.5 – Air traffic advisory service</b>			
ATMB 1.5.1	Define Air Traffic Advisory Service.	1	ICAO Annex 11
ATMB 1.5.2	Describe the scope of the Air Traffic	2	ICAO Doc 4444

	Advisory Service.		
ATMB 1.5.3	Explain the responsibility for the provision of the Air Traffic Advisory Service.	2	ICAO Doc 4444
ATMB 1.5.4	State to which flights Air Traffic Advisory Service shall be provided.	1	ICAO Doc 4444
<b>Subtopic ATMB 1.6 – ATS system capacity and air traffic flow management</b>			
ATMB 1.6.1	Define ATFM.	1	Commission Regulation (EU) No 549/2004
ATMB 1.6.2	State the scope of capacity management.	1	ICAO Annex 11
ATMB 1.6.3	Describe the scope of ATFCM.	2	ICAO Doc 4444 <i>Optional content: EUROCONTROL ATFCM Users Manual</i>
ATMB 1.6.4	Explain the responsibility for the provision of ATFCM.	2	ICAO Doc 4444 <i>Optional content: EUROCONTROL ATFCM Users Manual</i>
ATMB 1.6.5	State the methods of providing ATFCM.	1	ICAO Doc 4444 <i>Optional content: EUROCONTROL ATFCM Users Manual</i>
<b>Subtopic ATMB 1.7 – Airspace management (ASM)</b>			
ATMB 1.7.1	Define ASM.	1	Commission Regulation (EU) No 549/2004 <i>Optional content: Commission Regulation (EC) No 2150/2005, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA</i>
ATMB 1.7.2	Describe the scope of ASM.	2	<i>Optional content: FABs, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA</i>
ATMB 1.7.3	Explain the responsibility for the provision of ASM.	2	<i>Optional content: EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA</i>
ATMB 1.7.4	State the methods of managing airspace.	1	<i>Optional content: Flexible use of airspace, airspace design, CDRs, TSAs</i>
<b>TOPIC ATMB 2 ALTIMETRY AND LEVEL ALLOCATION</b>			
<b>Subtopic ATMB 2.1 – Altimetry</b>			
ATMB 2.1.1	Appreciate the relationship between height, altitude and flight level.	3	QFE, QNH, standard pressure
<b>Subtopic ATMB 2.2 – Transition level</b>			
ATMB 2.2.1	Appreciate the relationship between transition level, transition altitude and	3	ICAO Doc 4444, ICAO Doc 8168

	transition layer.		
ATMB 2.2.2	Calculate appropriate levels.	3	<i>Optional content: Transition level, transition layer, height, lowest useable flight level, vertical distance to airspace boundaries</i>
<b>Subtopic ATMB 2.3 – Level allocation</b>			
ATMB 2.3.1	Describe the cruising level allocation system.	2	ICAO Annex 2, tables of cruising levels
ATMB 2.3.2	Choose appropriate levels.	3	Flight levels, altitudes, heights
<b>TOPIC ATMB 3 RADIOTELEPHONY (RTF)</b>			
<b>Subtopic ATMB 3.1 – RTF general operating procedures</b>			
ATMB 3.1.1	Explain the need for approved phraseology.	2	
ATMB 3.1.2	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
ATMB 3.1.3	Perform communication effectively.	3	Communication techniques Readback/verification of readback
<b>TOPIC ATMB 4 ATC CLEARANCES AND ATC INSTRUCTIONS</b>			
<b>Subtopic ATMB 4.1 – Type and content of ATC clearances</b>			
ATMB 4.1.1	Define ATC clearance.	1	ICAO Annex 2
ATMB 4.1.2	Describe the contents of an ATC clearance.	2	ICAO Doc 4444, ICAO Annex 11
ATMB 4.1.3	Issue appropriate ATC clearances.	3	
<b>Subtopic ATMB 4.2 – ATC instructions</b>			
ATMB 4.2.1	Define ATC Instructions.	1	ICAO Doc 4444
ATMB 4.2.2	Describe the contents of ATC instructions.	2	ICAO Doc 4444, ICAO Annex 11
ATMB 4.2.3	Issue appropriate ATC instructions.	3	
<b>TOPIC ATMB 5 COORDINATION</b>			
<b>Subtopic ATMB 5.1 – Principles, types and content of coordination</b>			
ATMB 5.1.1	Explain the principles, types and content of coordination.	2	ICAO Doc 4444, ICAO Annex 11  <i>Optional content: notification, negotiation, agreement, transfer of flight data and local agreements, etc.</i>
<b>Subtopic ATMB 5.2 – Necessity for coordination</b>			
ATMB 5.2.1	Appreciate the need for coordination.	3	<i>Optional content: ICAO Doc 4444,</i>

			<i>Local agreements</i>
<b>Subtopic ATMB 5.3 – Means of coordination</b>			
ATMB 5.3.1	Describe the means of coordination.	2	<i>Optional content: Data link, telephone, intercom, voice, etc.</i>
ATMB 5.3.2	Use the available means for coordination.	3	
<b>TOPIC ATMB 6 DATA DISPLAY</b>			
<b>Subtopic ATMB 6.1 – Data extraction</b>			
ATMB 6.1.1	Encode and decode an appropriate selection of standard ICAO abbreviations.	3	<i>Optional content: ICAO Doc 8585, ICAO Doc 8643, ICAO Doc 7910</i>
ATMB 6.1.2	Extract pertinent data from relevant sources to produce a flight progress display.	3	<b>Pilot reports, coordination, data exchange</b> <i>Optional content: flight plan</i>
ATMB 6.1.3	Describe flight plan processing.	2	<i>Optional content: AFTN, IFPS</i>
ATMB 6.1.4	Encode and decode flight plans (including supplementary information).	3	<b>ICAO format, AFTN format</b>
<b>Subtopic ATMB 6.2 – Data management</b>			
ATMB 6.2.1	Update the situation display to accurately reflect the traffic situation.	3	<i>Optional content: Strip marking symbols, strip movement procedures, electronic data, label</i>

<b>TOPIC ATMB 7 SEPARATIONS</b>			
<b>Subtopic ATMB 7.1 – Data extraction</b>			
ATMB 7.1.1	State the vertical separation standards and procedures.	1	ICAO Doc 4444
<b>Subtopic ATMB 7.2 – Horizontal separation and procedures</b>			
ATMB 7.2.1	State the longitudinal separation standards and procedures based on time and distance.	1	ICAO Doc 4444
ATMB 7.2.2	State the lateral separation standards and procedures.	1	ICAO Doc 4444
<b>Subtopic ATMB 7.3 – Visual separation</b>			
ATMB 7.3.1	State the occasions when clearance to fly maintaining own separation while in VMC can be used.	1	
<b>Subtopic ATMB 7.4 – Wake turbulence separation</b>			
ATMB 7.4.1	Explain the wake turbulence categories and separations.	2	ICAO Doc 4444
<b>Subtopic ATMB 7.5 – Aerodrome separation and procedures</b>			
ATMB 7.5.1	State the aerodrome separation standards and procedures.	1	Separation on the manoeuvring area, in the traffic circuit, for departing and arriving aircraft
<b>Subtopic ATMB 7.6 – Separation based on ATS surveillance systems</b>			
ATMB 7.6.1	Explain the use of ATS surveillance systems in ATS.	2	Separation, identification, monitoring, vectoring, expedition and assistance to traffic <i>Optional content:</i> ICAO Doc 4444
ATMB 7.6.2	Explain the ATS surveillance systems separation standards and procedures.	2	
<b>Subtopic ATMB 7.7 – Applied separation</b>			
ATMB 7.7.1	Apply separation.	3	<i>Optional content: vertical, longitudinal, lateral, aerodrome, based on ATS surveillance systems, distances from airspace boundaries</i>
<b>TOPIC ATMB 8 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS</b>			
<b>Subtopic ATMB 8.1 – Airborne collision avoidance systems</b>			
ATMB 8.1.1	State the main characteristics of airborne warning systems and their relevance to ATC operations.	1	<i>Optional content: ACAS, GPWS, Wind shear alerts</i>
ATMB 8.1.2	State the function of ACAS Traffic Alerts and Resolution Advisories.	1	ICAO Doc 8168
ATMB 8.1.3	List, in the correct order, the actions of the pilot following the generation of ACAS	1	Commission Regulation (EU) No 1332/2011,

	event.		ICAO Doc 8168
ATMB 8.1.4	Describe the controller responsibility during and following an ACAS RA reported by pilot.	2	ICAO Doc 4444
ATMB 8.1.5	List the ACAS limitations.	1	ICAO Doc 9863
ATMB 8.1.6	Differentiate between ACAS advisory thresholds and ATC separation standards.	2	ICAO Doc 9863
<b>Subtopic ATMB 8.2 – Ground-based safety nets</b>			
ATMB 8.2.1	State the main characteristics of ground-based safety nets and their relevance to ATC operations.	1	<i>Optional content: STCA, MSAW, APW, APM</i>

## Subject 4: METEOROLOGY

<b>TOPIC METB 1 INTRODUCTION TO METEOROLOGY</b>			
<b>Subtopic METB 1.1 – Application of units of measurement</b>			
METB 1.1.1	Apply the units of measurement appropriate to meteorology.	3	
<b>Subtopic METB 1.2 – Aviation and meteorology</b>			
METB 1.2.1	Explain the relevance of meteorology in aviation.	2	
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
METB 1.2.3	State the meteorological hazards to aviation.	1	Turbulence, thunderstorms, icing, micro bursts, squall, macro burst, wind shear
<b>Subtopic METB 1.3 – Organisation of meteorological service</b>			
METB 1.3.1	Name the basic duties, organisation and working methods of meteorological offices.	1	<i>Optional content:</i> WAFS, WAFC, MWO, VAAC, TCAC, SADIS
METB 1.3.2	State the International and National standards for coordination between ATS and MET services.	1	
<b>TOPIC METB 2 ATMOSPHERE</b>			
<b>Subtopic METB 2.1 – Composition and structure</b>			
METB 2.1.1	State the composition and structure of Gases, layers the atmosphere.	1	Gases, layers
METB 2.1.2	Describe the basic characteristics of the atmospheric parameters measured.	2	Temperature, pressure, wind, humidity, density
METB 2.1.3	List the tools used for the collection of meteorological data.	1	<i>Optional content:</i> Barometer, thermometer, ceilometer, anemometer, weather balloons, transmissometer, radar, satellites, etc.
<b>Subtopic METB 2.2 – Standard atmosphere</b>			
METB 2.2.1	Describe the elements of the ISA.	2	Temperature, pressure, density
METB 2.2.2	State the reasons why the ISA has been defined.	1	

<b>Subtopic METB 2.3 – Heat and temperature</b>			
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
METB 2.3.2	Describe how temperature varies.	2	Adiabatic processes, lapse rates, stability
<b>Subtopic METB 2.4 – Water in the atmosphere</b>			
METB 2.4.1	Differentiate between the different processes related to atmospheric moisture.	2	Condensation, evaporation, sublimation, saturation
METB 2.4.2	Characterise relative humidity, dew point and latent heat.	2	
<b>Subtopic METB 2.5 – Air pressure</b>			
METB 2.5.1	Describe the relationship between pressure, temperature, density and height.	2	
METB 2.5.2	Explain the relationship between pressure settings.	2	QFE, QNH, standard pressure
METB 2.5.3	Explain the effect of air pressure and temperature on altimeter readings and the true altitude of aircraft.	2	
<b>TOPIC METB 3 ATMOSPHERIC CIRCULATION</b>			
<b>Subtopic METB 3.1 – General air circulation</b>			
METB 3.1.1	State the major atmospheric circulation features on the Earth.	1	<i>Optional content: Hadley cells, high and low belts, polar fronts, westerly winds, upper level jet streams</i>
<b>Subtopic METB 3.2 – Air masses and frontal systems</b>			
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)
METB 3.2.2	Describe the main isobaric features.	2	Cyclones, anticyclones, ridge, trough
METB 3.2.3	Describe the difference between various fronts and the associated weather.	2	Warm front, cold front, occluded front
<b>Subtopic METB 3.3 – Mesoscale systems</b>			
METB 3.3.1	Describe the main phenomena caused by mesoscale systems.	2	Mountain waves, Föhn, Slope and valley winds, thunderstorm, squall line <i>Optional content: land/sea breezes, tornadoes, land spouts, waterspouts</i>
METB 3.3.2	State the relevance of Mesoscale systems to aviation.	1	
<b>Subtopic METB 3.4 – Wind</b>			
METB 3.4.1	Explain the significance of wind phenomena and types.	2	<i>Optional content: veering, backing, gusting, jet streams, land/sea breezes, Föhn, surface, upper</i>

METB 3.4.2	State how wind is measured.	1	
METB 3.4.3	Explain effect of forces which influence wind.	2	
<b>TOPIC METB 4 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic METB 4.1 – Clouds</b>			
METB 4.1.1	Explain the different conditions for the formation of clouds.	2	
METB 4.1.2	Recognise different cloud types.	1	
METB 4.1.3	State the cloud types main characteristics.	1	
METB 4.1.4	State how the cloud base and the amount of cloud are measured and/or observed.	1	
METB 4.1.5	Define cloud base and ceiling.	1	
METB 4.1.6	Differentiate between cloud base and ceiling.	2	
<b>Subtopic METB 4.2 – Types of precipitation</b>			
METB 4.2.1	Explain the significance of precipitation in aviation.	2	
METB 4.2.2	Describe types of precipitation and their corresponding cloud families.	2	<i>Optional content: Rain, snow, snow grains, hail, ice pellets, ice crystals, drizzle</i>
<b>Subtopic METB 4.3 – Visibility</b>			
METB 4.3.1	Explain the causes of atmospheric obscurity.	2	
METB 4.3.2	Differentiate between different types of visibility.	2	Horizontal visibility, slant visibility, prevailing visibility, RVR
METB 4.3.3	State how visibility is measured.	1	
METB 4.3.4	Explain the significance of visibility in aviation.	2	
<b>Subtopic METB 4.4 – Meteorological hazards</b>			
METB 4.4.1	Describe the effect of meteorological hazards on aviation.	2	
<b>TOPIC METB 5 METEOROLOGICAL INFORMATION FOR AVIATION</b>			
<b>Subtopic METB 5.1 – Messages and reports</b>			
METB 5.1.1	Decode the content of weather reports and forecasts.	3	METAR, SPECI, TAF, SIGMET <i>Optional content: local reports</i>

## Subject 5: NAVIGATION

<b>TOPIC NAVB 1 INTRODUCTION TO NAVIGATION</b>			
<b>Subtopic NAVB 1.1 – Application of units of measurement</b>			
NAVB 1.1.1	Apply the units of measurement appropriate to navigation.	3	
<b>Subtopic NAVB 1.2 – Purpose and use of navigation</b>			
NAVB 1.2.1	Explain the need for navigation in aviation.	2	
NAVB 1.2.2	Characterise navigation methods.	2	<i>Optional content: Historical overview, celestial, on-board, radio, satellites</i>
<b>TOPIC NAVB 2 THE EARTH</b>			
<b>Subtopic NAVB 2.1 – Place and movement of the Earth</b>			
NAVB 2.1.1	Explain the Earth's properties and their effects.	2	<i>Optional content: Form, size, rotation, revolution in space, seasons, day, night, twilight, units of time, time zones, UTC</i>
<b>Subtopic NAVB 2.2 – System of coordinates, direction and distance</b>			
NAVB 2.2.1	Characterise the general principles of a grid system.	2	<i>Optional content: Degrees, minutes, seconds, WGS-84, latitude/longitude</i>
NAVB 2.2.2	Explain direction and distance on a globe.	2	<i>Optional content: Great circle, small circle, rhumb line, cardinal points, inter-cardinal points</i>
NAVB 2.2.3	Estimate position on the Earth's surface.	3	<i>Optional content: Latitude/longitude</i>
NAVB 2.2.4	Estimate distance and direction between two points.	3	
<b>Subtopic NAVB 2.3 – Magnetism</b>			
NAVB 2.3.1	Explain the general principles of the Earth's magnetism.	2	True north, magnetic north, variation, deviation, inclination
NAVB 2.3.2	Calculate conversions between the three north designations.	3	True north, magnetic north, compass north
<b>TOPIC NAVB 3 MAPS AND AERONAUTICAL CHARTS</b>			
<b>Subtopic NAVB 3.1 – Map making and projections</b>			
NAVB 3.1.1	State how the Earth is projected to create a map.	1	Types of projection
NAVB 3.1.2	Describe the properties of an ideal map.	2	<i>Optional content: Conformality, constant scale, true azimuth, rhumb lines and great circles</i>
NAVB 3.1.3	Explain the properties and use of different projections.	2	<i>Optional content: Lambert, Mercator, stereographic</i>
<b>Subtopic NAVB 3.2 – Maps and charts used in aviation</b>			

NAVB 3.2.1	Differentiate between the various maps and charts.	2	
NAVB 3.2.2	State the specific use of various maps and charts.	1	
NAVB 3.2.3	Decode symbols and information displayed on maps and charts.	3	
<b>TOPIC NAVB 4 NAVIGATIONAL BASICS</b>			
<b>Subtopic NAVB 4.1 – Influence of wind</b>			
NAVB 4.1.1	Appreciate the influence of wind on the flight path.	3	Heading, track, drift, wind vector
<b>Subtopic NAVB 4.2 – Speed</b>			
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)
NAVB 4.2.2	Appreciate the use of various speeds in ATC.	3	
<b>Subtopic NAVB 4.3 – Visual navigation</b>			
NAVB 4.3.1	Explain the different methods of visual navigation.	2	Map reading, visual reference <i>Optional content: dead-reckoning</i>
<b>Subtopic NAVB 4.4 – Navigational aspects of flight planning</b>			
NAVB 4.4.1	Describe the navigational aspects affecting flight planning.	2	<i>Optional content: fuel/time calculations, min altitudes, alternative routes</i>
<b>TOPIC NAVB 5 INSTRUMENTAL NAVIGATION</b>			
<b>Subtopic NAVB 5.1 – Ground-based systems</b>			
NAVB 5.1.1	Explain the basic working principles of ground-based systems.	2	VDF, NDB, VOR, DME, ILS <i>Optional content: TACAN, MLS</i>
NAVB 5.1.2	State the use of ground-based systems.	1	VDF, NDB, VOR, DME, ILS <i>Optional content: TACAN, MLS</i>
NAVB 5.1.3	Characterise the main radio navigation techniques based on ground-based systems.	2	<i>Optional content: homing, inbound/outbound tracking, instrument approach procedures, holding, drift assessment</i>
NAVB 5.1.4	Explain the effects of precision and limitations of ground-based systems on the flight.	2	VDF, NDB, VOR, DME, ILS <i>Optional content: TACAN, MLS</i>
<b>Subtopic NAVB 5.2 – On-board systems</b>			
NAVB 5.2.1	Explain the basic working principles of on-boards systems.	2	<i>Optional content: INS/IRS</i>
NAVB 5.2.2	State the use of on-board systems.	1	
NAVB 5.2.3	Explain the effects of precision and limitations of on-board systems.	2	

<b>Subtopic NAVB 5.3 – Satellite-based systems</b>			
NAVB 5.3.1	Explain the basic working principles of positioning systems.	2	<i>Optional content: GPS, GLONASS, Galileo</i>
NAVB 5.3.2	State the basic principles of GNSS concept.	1	<b>Basic, ABAS, SBAS, GBAS</b>
NAVB 5.3.3	State the effects of precision and limitations of satellite-based systems.	1	<i>Optional content: RAIM, GPS Notams</i>
<b>TOPIC NAVB 6 AREA NAVIGATION</b>			
<b>Subtopic NAVB 6.1 – Principles and benefits</b>			
NAVB 6.1.1	Explain the basic principle of area navigation.	2	
NAVB 6.1.2	State the benefits of area navigation.	1	
<b>Subtopic NAVB 6.2 – Types and techniques</b>			
NAVB 6.2.1	List the types of RNAV.	1	<i>Optional content: B-RNAV, P-RNAV, RNP-RNAV</i>
NAVB 6.2.2	Characterise the main navigational techniques based on area navigation.	2	<i>Optional content: waypoints and path terminators, fly over and fly by a waypoint</i>
NAVB 6.2.3	Characterise the navigational functions of FMS.	2	<i>Optional content: VNAV, LNAV</i>
NAVB 6.2.4	List the types of RNP.	1	
<b>Subtopic NAVB 6.3 – New developments</b>			
NAVB 6.3.1	Name new developments in area navigation.	1	<b>PBN, etc.</b>

## Subject 6: AIRCRAFT

<b>TOPIC ACFTB 1 INTRODUCTION TO AIRCRAFT</b>			
<b>Subtopic ACFTB 1.1 – Application of units of measurement</b>			
ACFTB 1.1.1	Apply the units of measurement appropriate to aircraft and principles of flight.	3	
<b>Subtopic ACFTB 1.2 – Aviation and aircraft</b>			
ACFTB 1.2.1	Explain the relevance of theory of flight and aircraft characteristics in ATS operations.	2	
<b>TOPIC ACFTB 2 PRINCIPLES OF FLIGHT</b>			
<b>Subtopic ACFTB 2.1 – Forces acting on aircraft</b>			
ACFTB 2.1.1	Explain the forces acting on an aircraft in flight and their interaction.	2	Lift, thrust, drag, weight during level flight <i>Optional content: during climb, descent, turn</i>
ACFTB 2.1.2	Explain causes and effects of wake turbulence.	2	Induced drag
<b>Subtopic ACFTB 2.2 – Structural components and control of an aircraft</b>			
ACFTB 2.2.1	List the main structural components of an aircraft.	1	Rotary and fixed wing, tail plane, fuselage, flap, aileron, elevator, rudder, landing gear
ACFTB 2.2.2	Explain how the pilot controls the movements of an aircraft.	2	<i>Optional content: rudder, aileron, elevator, throttle, rotary wing controls</i>
<b>Subtopic ACFTB 2.3 – Flight envelope</b>			
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
<b>TOPIC ACFTB 3 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFTB 3.1 – Aircraft categories</b>			
ACFTB 3.1.1	List the different categories of aircraft.	1	<i>Optional content: Fixed wing, rotary wing, balloon, glider</i>
<b>Subtopic ACFTB 3.2 – Wake turbulence categories</b>			
ACFTB 3.2.1	List the wake turbulence categories.	1	ICAO wake turbulence categories
<b>Subtopic ACFTB 3.3 – ICAO approach categories</b>			
ACFTB 3.3.1	List the ICAO approach categories.	1	ICAO Doc 8168
<b>TOPIC ACFTB 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFTB 4.1 – Recognition</b>			
ACFTB 4.1.1	Recognise the most commonly used aircraft.	1	
<b>Subtopic ACFTB 4.2 – Performance data</b>			

ACFTB 4.2.1	State the ICAO aircraft type designators and categories for the most commonly used aircraft.	1	Type designators, approach and wake turbulence categories
ACFTB 4.2.2	State the standard average performance data of the most commonly used aircraft.	1	Rate of climb/descent, cruising speed, ceiling
<b>TOPIC ACFTB 5 AIRCRAFT ENGINES</b>			
<b>Subtopic ACFTB 5.1 – Piston engines</b>			
ACFTB 5.1.1	Explain the operating principles, advantages and disadvantages of the piston engine and propeller.	2	Piston engines, fixed pitch, variable pitch, number of blades
<b>Subtopic ACFTB 5.2 – Jet engines</b>			
ACFTB 5.2.1	Explain the operating principles, advantages and disadvantages of the jet engine.	2	
ACFTB 5.2.2	List the different types of jet engines.	1	
<b>Subtopic ACFTB 5.3 – Turboprop engines</b>			
ACFTB 5.3.1	Explain the operating principles, advantages and disadvantages of the turboprop engine and propeller.	2	
<b>TOPIC ACFTB 6 AIRCRAFT SYSTEMS AND INSTRUMENTS</b>			
<b>Subtopic ACFTB 6.1 – Flight instruments</b>			
ACFTB 6.1.1	Explain the basic operating principles and interpretation of the information displayed by flight instruments.	2	Altimeter, air speed indicator, vertical speed indicator, turn and bank indicator, artificial horizon, gyrosyn compass
ACFTB 6.1.2	Explain the impact of errors and abnormal indications of flight instruments on aircraft operations.	2	<i>Optional content:</i> <i>Pitot-static failures,</i> <i>unreliable gyro source</i>
<b>Subtopic ACFTB 6.2 – Navigational instruments</b>			
ACFTB 6.2.1	Describe the basic on-board operating principles and interpretation of the information displayed by navigational instruments/systems.	2	<i>Optional content:</i> <i>ADF,</i> <i>VOR (TACAN), DME, ILS,</i> <i>MLS, inertial reference</i> <i>system, satellite-based</i> <i>systems</i>

<b>Subtopic ACFTB 6.3 – Engine instruments</b>		
ACFTB 6.3.1	List the vital engine monitoring parameters and their associated instruments.	1 <i>Optional content: Oil pressure and temperature, engine temperature, rpm, fuel state and flow</i>
<b>Subtopic ACFTB 6.4 – Aircraft systems</b>		
ACFTB 6.4.1	Explain the use of the most common aircraft systems.	2 <i>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</i>
ACFTB 6.4.2	Explain the impact of degradation/failure of the most common aircraft systems on aircraft operations.	2 <i>Optional content: hydraulic failure, electrical failure, environmental system failure, degradation of aircraft position source data</i>
<b>TOPIC ACFTB 7 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>		
<b>Subtopic ACFTB 7.1 – Take-off factors</b>		
ACFTB 7.1.1	Explain the factors affecting aircraft during take-off.	2 Runway conditions, runway slope, wind, temperature, aerodrome elevation, aircraft mass
<b>Subtopic ACFTB 7.2 – Climb factors</b>		
ACFTB 7.2.1	Explain the factors affecting aircraft during climb.	2 Speed, mass, wind, temperature, cabin pressurisation, air density
<b>Subtopic ACFTB 7.3 – Cruise factors</b>		
ACFTB 7.3.1	Explain the factors affecting aircraft during cruise.	2 Level, cruising speed, wind, mass, cabin pressurisation
<b>Subtopic ACFTB 7.4 – Descent and initial approach factors</b>		
ACFTB 7.4.1	Explain the factors affecting aircraft during descent.	2 Wind, speed, rate of descent, aircraft configuration, cabin pressurisation
<b>Subtopic ACFTB 7.5 – Final approach and landing factors</b>		
ACFTB 7.5.1	Explain the factors affecting aircraft during final approach and landing.	2 Aircraft configuration, mass, wind, wind shear, aerodrome elevation, runway conditions, runway slope
<b>Subtopic ACFTB 7.6 – Economic factors</b>		
ACFTB 7.6.1	Explain the economic consequences of ATC changes on the flight profile of an aircraft.	2 Routing, flight level, speed, rates of climb or descent
<b>Subtopic ACFTB 7.7 – Environmental factors</b>		

ACFTB 7.7.1	Explain performance restrictions due to ecological constraints.	2	<i>Optional content: Fuel dumping, noise abatement procedures, minimum flight levels</i>
<b>Subtopic ACFTB 7.8 – Miscellaneous factors</b>			
ACFTB 7.8.1	Explain special operational requirements which affect aircraft performance.	2	<i>Optional content: Military flying, calibration flights, aerial photography</i>

## Subject 7: HUMAN FACTORS

<b>TOPIC HUMB 1 INTRODUCTION TO HUMAN FACTORS</b>			
<b>Subtopic HUMB 1.1 – Reference documents and learning techniques</b>			
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
HUMB 1.1.2	List the reference documents used.	1	<i>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)</i>
HUMB 1.1.3	Appreciate appropriate learning techniques.	3	How the influence of interactive techniques can lead to improved learning
<b>Subtopic HUMB 1.2 – Why human factors?</b>			
HUMB 1.2.1	Explain why human factors is a subject in this course.	2	Historical background, safety impact on ATM, licensing requirements, incidents
HUMB 1.2.2	Define human factors.	1	<i>Optional content: ICAO Human Factors Training Manual</i>
HUMB 1.2.3	Explain the concept of systems.	2	People, procedures, equipment
HUMB 1.2.4	Explain ATM in systems terms.	2	
HUMB 1.2.5	Recognise the consequences of a systems failure in ATS.	1	
HUMB 1.2.6	Explain the need for matching human and equipment.	2	<i>Optional content: ICAO Human Factors Training Manual</i>
HUMB 1.2.7	Explain the use and benefits of the SHELL model.	2	<i>Optional content: ICAO Human Factors Training Manual, visits to the simulator and operational room</i>
HUMB 1.2.8	Explain the information requirement of Relevant, timely, accurate ATC.	2	Relevant, timely, accurate
HUMB 1.2.9	Describe the role of the human in the evolution of ATC.	2	<i>Optional content: History of ATC, airspace, communications, radar, advanced ATS systems, the future of ATC</i>
HUMB 1.2.10	Recognise the importance of situational awareness for decision making.	1	

<b>TOPIC HUMB 2 HUMAN PERFORMANCE</b>			
<b>Subtopic HUMB 2.1 – Individual behaviour</b>			
HUMB 2.1.1	Explain the differences and commonalities that exist between people.	2	<i>Optional content: Attitudes, cultural, language</i>
HUMB 2.1.2	Explain the dangers of boredom.	2	
HUMB 2.1.3	Explain the dangers of overconfidence and complacency.	2	
HUMB 2.1.4	Explain the dangers of fatigue.	2	Sleep disturbance, heavy workload
<b>Subtopic HUMB 2.2 – Professional conduct</b>			
HUMB 2.2.1	Describe the need for professional standards in ATC.	2	<i>Optional content: adherence to rules and regulations, etc.</i>
HUMB 2.2.2	Describe the needed basic professional attitudes to respond to a high level of safety.	2	<i>Optional content: punctuality, rigour, adherence to rules, teamwork attitude</i>
HUMB 2.2.3	Recognise the impact of responsibility on controllers action(s).	1	Responsibility as a guidance for appropriate action
HUMB 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.)
<b>Subtopic HUMB 2.3 – Health and well-being</b>			
HUMB 2.3.1	Consider the effect of health on performance.	2	<i>Optional content: Fitness, diet, drugs, alcohol</i>

<b>Subtopic HUMB 2.4 – Teamwork</b>			
HUMB 2.4.1	Describe the differences between social human relations and professional interactions.	2	
HUMB 2.4.2	Describe the different types and characters in a team.	2	<i>Optional content: leader, follower</i>
HUMB 2.4.3	Describe the principles of teamwork.	2	<i>Optional content: team membership, group dynamics, advantages/disadvantages of teamwork, conflicts and their solutions</i>
HUMB 2.4.4	Describe leader style and group interaction.	2	
<b>Subtopic HUMB 2.5 – Basic needs of people at work</b>			
HUMB 2.5.1	List basic needs of people at work.	1	<i>Optional content: Balance between: individual ability and workload, working time and rest periods. Adequate physical working conditions, positive working environment</i>
HUMB 2.5.2	Characterise the factors of work satisfaction.	2	<i>Optional content: money, achievement, recognition, advancement, challenge</i>
<b>Subtopic HUMB 2.6 – Stress</b>			
HUMB 2.6.1	Define stress.	1	<b>Stress definition</b> <i>Optional content: EATCHIP Human Factors Module - Stress</i>
HUMB 2.6.2	Recognise stress symptoms and sources.	1	<b>Behavioural changes, lifestyle changes, physical symptoms, crisis events, main causes of stress</b> <i>Optional content: EATCHIP Human Factors Module - Stress</i>
HUMB 2.6.3	Describe the stages of stress.	2	<b>Stress performance curve</b> <i>Optional content: EATCHIP Human Factors Module - Stress</i>
HUMB 2.6.4	Describe techniques for stress management.	2	<i>Optional content: Relaxation techniques, diet and lifestyle, exercise, EATCHIP Human Factors Module - Stress</i>
<b>TOPIC HUMB 3 HUMAN ERROR</b>			
<b>Subtopic HUMB 3.1 – Dangers of error</b>			
HUMB 3.1.1	Recognise the dangers of error in ATC.	1	<i>Optional content: Air Traffic Control-Human Performance Factors, (Anne Isaac 1999), Human Factors in Air Traffic</i>

			<i>Control, (V. David Hopkin 1995)</i>
<b>Subtopic HUMB 3.2 – Definition of human error</b>			
HUMB 3.2.1	Define human error.	1	
HUMB 3.2.2	Describe the factors which help to cause error.	2	<i>Optional content: fatigue, lack of skill, misunderstanding, lack of information, distraction, lack of work satisfaction</i>
<b>Subtopic HUMB 3.3 – Classification of human error</b>			
HUMB 3.3.1	State the types of errors.	1	<i>Optional content: slips, lapses, mistakes</i>
HUMB 3.3.2	Define violations.	1	
HUMB 3.3.3	Differentiate between errors and violations of rules.	2	
HUMB 3.3.4	Describe the three levels of performance according to the Rasmussen model.	2	Skill based, knowledge based, rule based
<b>Subtopic HUMB 3.4 – The Reason model</b>			
HUMB 3.4.1	Describe the Reason model.	2	Active failures and latent conditions
HUMB 3.4.2	Apply the Reason principles on error during a case study.	3	<i>Optional content: Herald of Free Enterprise accident</i>
<b>TOPIC HUMB 4 COMMUNICATION</b>			
<b>Subtopic HUMB 4.1 – Importance of good communications in ATC</b>			
HUMB 4.1.1	Demonstrate the importance of good communications in ATC.	2	
<b>Subtopic HUMB 4.2 – Communication process</b>			
HUMB 4.2.1	Define communication.	1	
HUMB 4.2.2	Define the communication process.	1	<i>Optional content: Sender, encoder, transmitter, signal, interference, reception, decoder, receiver, feedback</i>
<b>Subtopic HUMB 4.3 – Communication modes</b>			
HUMB 4.3.1	Describe the factors which affect verbal communication.	2	<i>Optional content: word choice, intonation, speed, tone, distortion, load, expectation, noise, interruption, language knowledge (i.e. accent, dialect, vocabulary)</i>
HUMB 4.3.2	Describe the factors which affect non-verbal communication.	2	<i>Optional content: touch, choice, expectation, noise, interruption</i>
HUMB 4.3.3	Apply good communication practices.	3	Speaking and listening
<b>TOPIC HUMB 5 THE WORK ENVIRONMENT</b>			
<b>Subtopic HUMB 5.1 – Ergonomics and the need for good design</b>			
HUMB 5.1.1	Define ergonomics.	1	

HUMB 5.1.2	Recognise the need for good building design.	1	<i>Optional content: light, insulation, decor, space, facilities</i>
HUMB 5.1.3	Explain the need for good work position design.	2	<i>Optional content: anthropometry (seating, work station design, input device, etc.)</i>
<b>Subtopic HUMB 5.2 – Equipment and tools</b>			
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
<b>Subtopic HUMB 5.3 – Automation</b>			
HUMB 5.3.1	Explain the reasons for automation.	2	
HUMB 5.3.2	Describe the constraints of automation.	2	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPSB 1 ATC EQUIPMENT</b>			
<b>Subtopic EQPSB 1.1 – Main types of ATC equipment</b>			
EQPSB 1.1.1	Characterise the main items of ATC equipment.	2	<i>Optional content: Communication equipment, VDF/UDF, ATS surveillance systems, situation displays</i>
<b>TOPIC EQPSB 2 RADIO</b>			
<b>Subtopic EQPSB 2.1 – Radio theory</b>			
EQPSB 2.1.1	State principles of radio.	1	
EQPSB 2.1.2	Recognise the characteristics of radio waves.	1	Propagation, limitations
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
<b>Subtopic EQPSB 2.2 – Radio communications</b>			
EQPSB 2.2.1	State the use of the radio in ATC.	1	
EQPSB 2.2.2	Describe the working principles of a transmitting and receiving system.	2	
EQPSB 2.2.3	Explain the effect of antenna shadowing on RTF communications.	2	
<b>Subtopic EQPSB 2.3 – Direction finding</b>			
EQPSB 2.3.1	State the principles and use of VDF/UDF.	1	VDF/UDF, QDM, QDR, QTF
EQPSB 2.3.2	State the precision of VDF/UDF used in the State system.	1	
<b>TOPIC EQPSB 3 OTHER SYSTEMS AND COMMUNICATIONS</b>			
<b>Subtopic EQPSB 3.1 – ATC communications</b>			
EQPSB 3.1.1	Describe the use of other voice communications in ATC.	2	<i>Optional content: telephone, interphone, intercom</i>
<b>Subtopic EQPSB 3.2 – Airline communications</b>			
EQPSB 3.2.1	State the use of SELCAL.	1	
<b>Subtopic EQPSB 3.3 – Air-ground communications</b>			
EQPSB 3.3.1	State the use of controller pilot datalink communications (CPDLC).	1	

<b>TOPIC EQPSB 4 INTRODUCTION TO SURVEILLANCE</b>			
<b>Subtopic EQPSB 4.1 – Surveillance concept in ATS</b>			
EQPSB 4.1.1	Describe the concept of surveillance for the provision of ATS.	2	
<b>TOPIC EQPSB 5 RADAR</b>			
<b>Subtopic EQPSB 5.1 – Principles of radar</b>			
EQPSB 5.1.1	State the principles of radar.	1	
EQPSB 5.1.2	Recognise the characteristics of radar wavelengths.	1	
EQPSB 5.1.3	Recognise the use, characteristics and limitations of different radar types.	1	<i>Optional content: frequency bands, long and short-range radar, weather radar, high-resolution radar</i>
<b>Subtopic EQPSB 5.2 – Primary radar</b>			
EQPSB 5.2.1	Explain the working principles of PSR.	2	
<b>Subtopic EQPSB 5.3 – Secondary radar</b>			
EQPSB 5.3.1	Explain the working principles of SSR.	2	Mode A, Mode C
EQPSB 5.3.2	Explain SSR code management.	2	Discrete, non-discrete codes, special codes
EQPSB 5.3.3	Explain the effect of antenna shadowing on SSR operation.	2	
<b>Subtopic EQPSB 5.4 – Use of radars</b>			
EQPSB 5.4.1	Explain the use of PSR/SSR in ATC.	2	Area, approach, aerodrome, surface movement radar, DFTI
EQPSB 5.4.2	Explain the advantages and disadvantages of PSR/SSR.	2	
<b>Subtopic EQPSB 5.5 – Mode S</b>			
EQPSB 5.5.1	State the principles of Mode S.	1	
EQPSB 5.5.2	Explain the use of Mode S in ATC systems.	2	
<b>TOPIC EQPSB 6 AUTOMATIC DEPENDENT SURVEILLANCE</b>			
<b>Subtopic EQPSB 6.1 – Principles of automatic dependent surveillance</b>			
EQPSB 6.1.1	State the different applications of ADS.	1	ADS-B, ADS-C
EQPSB 6.1.2	Explain the working principles of ADS.	2	
<b>Subtopic EQPSB 6.2 – Use of automatic dependent surveillance</b>			
EQPSB 6.2.1	Describe the use of ADS in ATC.	2	Area, approach, aerodrome
EQPSB 6.2.2	Explain the limitations of ADS.	2	Dependency on GNSS, dependency on airborne equipment
<b>TOPIC EQPSB 7 MULTILATERATION</b>			
<b>Subtopic EQPSB 7.1 – Principles of multilateration</b>			
EQPSB 7.1.1	State the different applications of MLAT.	1	<i>Optional content: ATC, Environmental</i>

			<i>Management, Airport Operations, LAM, WAM</i>
EQPSB 7.1.2	Explain the working principles of MLAT.	2	<i>Optional content: Passive and active MLAT</i>
<b>Subtopic EQPSB 7.2 – Use of multilateration</b>			
EQPSB 7.2.1	Describe the use of MLAT in ATC.	2	Area, approach, aerodrome
EQPSB 7.2.2	Explain the limitations of MLAT.	2	Dependency on airborne equipment
<b>TOPIC EQPSB 8 SURVEILLANCE DATA PROCESSING</b>			
<b>Subtopic EQPSB 8.1 – Surveillance data networking</b>			
EQPSB 8.1.1	Explain the advantages and disadvantages of different surveillance technologies.	2	Data quality, coverage, refresh rate, reliability, redundancy, cost-effectiveness
EQPSB 8.1.2	Describe the implementation of Surveillance Data Networks.	2	<i>Optional content: different technologies/sensors, network</i>
<b>Subtopic EQPSB 8.2 – Working principles of surveillance data networking</b>			
EQPSB 8.2.1	Explain the working principles of surveillance data processing.	2	Track fusion process, Surveillance information presented on CWP
EQPSB 8.2.2	State other use of processed surveillance data.	1	<i>Optional content: safety nets, airport operations, environmental management</i>
<b>TOPIC EQPSB 9 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPSB 9.1 – New developments</b>			
EQPSB 9.1.1	Name the developments in the equipment field foreseen for introduction in the near future.	1	
<b>TOPIC EQPSB 10 AUTOMATION IN ATS</b>			
<b>Subtopic EQPSB 10.1 – Principles of automation</b>			
EQPSB 10.1.1	Describe the principles of automation in communication and datalinks in ATS.	2	
<b>Subtopic EQPSB 10.2 – Aeronautical fixed telecommunication network (AFTN)</b>			
EQPSB 10.2.1	Describe the principles of AFTN.	2	
<b>Subtopic EQPSB 10.3 – On-line data interchange</b>			
EQPSB 10.3.1	Recognise the benefits of automatic exchange of ATS data in coordination and transfer processes.	1	Accuracy, speed and safety, non-verbal communications
EQPSB 10.3.2	Recognise the limitations of automatic exchange of ATS data in coordination.	1	Non-recognition of a systems failure
<b>Subtopic EQPSB 10.4 – Closed circuit information system</b>			
EQPSB 10.4.1	State the principles of CCIS.	1	
EQPSB 10.4.2	Explain the use of CCIS in ATS.	2	Data carried on CCIS

<b>Subtopic EQPSB 10.5 – Systems used for the automatic dissemination of information</b>			
EQPSB 10.5.1	State the working principles of broadcasting systems.	1	<i>Optional content: ATIS, VOLMET</i>
EQPSB 10.5.2	Explain the use of ATIS and VOLMET in ATS.	2	
<b>TOPIC EQPSB 11 WORKING POSITIONS</b>			
<b>Subtopic EQPSB 11.1 – Working position equipment</b>			
EQPSB 11.1.1	Recognise equipment in a working position.	1	<i>Optional content: FPB, radio, telephone and other communication equipment, relevant maps and charts, strip printer, teleprinter, clock, information monitors, situation displays</i>
<b>Subtopic EQPSB 11.2 – Aerodrome control</b>			
EQPSB 11.2.1	Recognise equipment to be found specifically in a TWR.	1	<i>Optional content: Wind indicator, DFTI, SMR, crash alarm, signalling lamp, lighting control panel, runway-in-use indicator, binoculars, signalling/flare gun, IRVR and altimeter setting indicators, CCIS</i>
<b>Subtopic EQPSB 11.3 – Approach control</b>			
EQPSB 11.3.1	Recognise equipment to be found specifically in an APP.	1	<i>Optional content: Sequencing system, PAR, RVR indicators</i>
<b>Subtopic EQPSB 11.4 – Area control</b>			
EQPSB 11.4.1	Recognise equipment to be found specifically in an ACC.	1	

## Subject 9: PROFESSIONAL ENVIRONMENT

<b>TOPIC PENB 1 FAMILIARISATION</b>			
<b>Subtopic PENB 1.1 – ATS and aerodrome facilities</b>			
PENB 1.1.1	Recognise civil and military ATS facilities.	1	<i>Optional content: TWR, APP, ACC, AIS, RCC, Air Defence Unit</i>
PENB 1.1.2	Recognise airport facilities and local operators.	1	<i>Optional content: fire and emergency services, airline operations office</i>
<b>TOPIC PENB 2 AIRSPACE USERS</b>			
<b>Subtopic PENB 2.1 – Civil aviation</b>			
PENB 2.1.1	Name airspace requirements for civil aircraft.	1	<i>Optional content: Commercial flying, recreational flying, gliders, balloons</i>
<b>Subtopic PENB 2.2 – Military aviation</b>			
PENB 2.2.1	Name airspace requirements for military aircraft.	1	<i>Optional content: Low-level flying, in-flight refuelling, test flights, special military operations</i>
<b>Subtopic PENB 2.3 – Expectations and requirements of pilots</b>			
PENB 2.3.1	Recognise the expectations and requirements of pilots.	1	
<b>TOPIC PENB 3 CUSTOMER RELATIONS</b>			
<b>Subtopic PENB 3.1 – Customer relations</b>			
PENB 3.1.1	State the role of ATC as a service provider.	1	
PENB 3.1.2	Recognise the means by which ATC is funded.	1	
<b>TOPIC PENB 4 ENVIRONMENTAL PROTECTION</b>			
<b>Subtopic PENB 4.1 – Environmental protection</b>			
PENB 4.1.1	Recognise the importance of environmental protection.	1	Air, water, noise

**Supplements**

## Supplement 1

### SYLLABI STRUCTURE - HOW TO READ THE TABLES

#### 1. Structure of the Basic training syllabus

- a. The Basic training has been structured as a syllabus, as follows:
  - i. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - ii. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 3 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(1) Basic training)

Subject 7 : HUMAN FACTORS		← Subject
TOPIC HUMB 1 INTRODUCTION TO HUMAN FACTORS		← Topic
Sub-topic HUMB 1.1 - Reference documents and Learning techniques		← Sub -topic
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
HUMB 1.1.2	List the reference documents used.	1 <i>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)</i>
HUMB 1.1.3	Appreciate appropriate learning techniques.	3 How the influence of interactive techniques can lead to improved learning

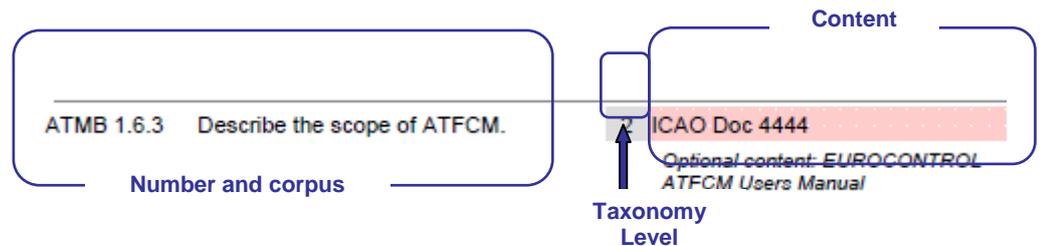
**Figure 1: Layout of syllabus**

- b. The following principles may be applied to the development of a training course that is based on any of the syllabi:
  - i. The structure of the syllabi and the order of the objectives contained within Appendix 3 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - ii. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - iii. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter period of time to teach, than another Subtopic containing two complex objectives

#### 2. Structure of objectives

- a. An objective consists of three elements:
  - i. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- ii. The level, which indicates numerically the taxonomy of the action verb.
- iii. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

3. **Action verbs that support the taxonomy for training objectives:**

The three taxonomy levels represented in the Basic training should be understood to have the following levels of complexity:

- a. Action verbs for Level 1

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

L1 Verb	Definition	Example
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

## b. Action verbs for Level 2

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

<b>L2 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences between things	Differentiate between different types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

## c. Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination.)
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality	Measure distance on a map

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
	of (thing) by comparison with fixed unit or with object of known size	
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to extract relevant data	Scan data display
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

- d. Application of taxonomy levels to practically-based objectives
- i. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except Air Traffic Management Basic

(ATMB), may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.

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

## Supplement 2

### Abbreviations

For purposes of AMC1, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACFTB	Aircraft Basic (subject)
ADF	Automatic Direction Finding System
ADS	Automatic Dependent Surveillance
ADVS	Advisory Service
AEA	Association of European Airlines
AFTN	Aeronautical fixed telecommunication network
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APW	Area Proximity Warning
ASM	Airspace Management
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATMB	Air Traffic Management Basic (subject)
ATS	Air Traffic Services
B-RNAV	Basic Area Navigation
CANSO	Civil Air Navigation Services Organisation
CBT	Computer Based Training
CCIS	Closed Circuit Information System

CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EASA	European Aviation Safety Agency
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme (later 'EATMP' and 'EATM')
EATMP	European Air Traffic Management Programme (later 'EATM')
EC	European Commission
ECAC	European Civil Aviation Conference
EFIS	Electronic Flight Instrument System
EQPSB	Equipment and Systems Basic (subject)
ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FUA	Flexible Use of Airspace
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HBK	Handbook
HF	High Frequency
HUMB	Human Factors Basic (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System

INTRB	Introduction to the course Basic (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union
LAWB	Aviation Law Basic (subject)
LNAV	Lateral Navigation
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
METB	Meteorology Basic (subject)
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MWO	Meteorological Watch Office
NAVB	Navigation Basic (subject)
NDB	Non-Directional Beacon
No	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PENB	Professional Environment Basic (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring
RCC	Rescue Coordination Centre
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb

RTF	Radio Telephony
RVR	Runway Visual Range
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency
UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84

**ANNEX 1 – PART-ATCO****SUBPART D – ATCO TRAINING****Section 2 – Initial training requirements for Air Traffic Controllers****AMC1 to Appendix 4 –  
Aerodrome Control Visual Rating (ADV)**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. ATCO Rating training Aerodrome Control Visual Rating (ADV) should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 4 – Aerodrome Control Visual Rating (ADV)**.
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTR 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTR 1.1 – Course introduction</b>			
ADV INTR 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTR 1.2 – Course administration</b>			
ADV INTR 1.2.1	State course administration.	1	
<b>Subtopic INTR 1.3 – Study material and training documentation</b>			
ADV INTR 1.3.1	Use appropriate documentation and their sources for the course.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
ADV INTR 1.3.2	Integrate appropriate information into course studies.	4	<i>Optional content: Training documentation, supplementary information, library</i>
<b>TOPIC INTR 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTR 2.1 – Course content and organisation</b>			
ADV INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
ADV INTR 2.1.2	State the subjects of the course and their purpose.	1	
ADV INTR 2.1.3	Describe the organisation of theoretical training.	2	
ADV INTR 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTR 2.2 – Training ethos</b>			
ADV INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor /instructor feedback
<b>Subtopic INTR 2.3 – Assessment process</b>			
ADV INTR 2.3.1	Describe the assessment process.	2	

## Subject 2: AVIATION LAW

<b>TOPIC LAW 1 ATC LICENSING/CERTIFICATE OF COMPETENCE</b>			
<b>Subtopic LAW 1.1 - Privileges and conditions</b>			
ADV LAW 1.1.1	Appreciate the conditions which must be met for the issue of Aerodrome Control Visual rating.	3	Commission Regulation (EU) No 805/2011 <i>Optional content: National documents</i>
ADV LAW 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	Commission Regulation (EU) No 805/2011
<b>TOPIC LAW 2 RULES AND REGULATIONS</b>			
<b>Subtopic LAW 2.1 – Reports</b>			
ADV LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report <i>Optional content: routine air reports, breach of regulations, watch/log book, records</i>
ADV LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	Reporting culture, Air traffic incident report <i>Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2</i>
ADV LAW 2.1.3	Use forms for reporting.	3	Air traffic incident reporting form(s) <i>Optional content: ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records</i>
<b>Subtopic LAW 2.2 – Airspace</b>			
ADV LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Aerodrome Control Visual rating operations.	3	
ADV LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	<i>Optional content: ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation</i>
ADV LAW 2.2.3	Appreciate responsibility for terrain clearance.	3	

### Subject 3: AIR TRAFFIC MANAGEMENT

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

<b>Subtopic ATM 2.1 – Effective communication</b>			
ADV ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 <i>Optional content: ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2</i>
ADV ATM 2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback
ADV ATM 2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4	
<b>TOPIC ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS</b>			
<b>Subtopic ATM 3.1 – ATC clearances</b>			
ADV ATM 3.1.1	Issue appropriate ATC clearances.	3	
ADV ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4	
ADV ATM 3.1.3	Ensure the agreed course of action is carried out.	4	
<b>Subtopic ATM 3.2 – ATC instructions</b>			
ADV ATM 3.2.1	Issue appropriate ATC instructions.	3	
ADV ATM 3.2.2	Integrate appropriate ATC instructions in control service	4	
ADV ATM 3.2.3	Ensure the agreed course of action is carried out	4	
<b>TOPIC ATM 4 COORDINATION</b>			
<b>Subtopic ATM 4.1 – Necessity for coordination</b>			
ADV ATM 4.1.1	Identify the need for coordination.	3	
<b>Subtopic ATM 4.2 – Tools and methods for coordination</b>			
ADV ATM 4.2.1	Use the available tools for coordination.	3	<i>Optional content: Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination</i>
<b>Subtopic ATM 4.3 – Coordination procedures</b>			
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 <i>Optional content: release point</i>
ADV ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>Optional content: Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>
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.
ADV ATM 4.3.4	Ensure the agreed course of action is carried out.	4	
ADV ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444
ADV ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444

#### TOPIC ATM 5 ALTIMETRY AND LEVEL ALLOCATION

##### Subtopic ATM 5.1 – Altimetry

ADV ATM 5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168
ADV ATM 5.1.2	Ensure separation according to altimetry data.	4	<i>Optional content: Transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries</i>

#### TOPIC ATM 6 SEPARATIONS

##### Subtopic ATM 6.1 – Separation between departing aircraft

ADV ATM 6.1.1	Provide separation between departing aircraft.	4	ICAO Doc 4444
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##### Subtopic ATM 6.2 – Separation of landing aircraft and preceding landing or departing

ADV ATM 6.2.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	ICAO Doc 4444
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##### Subtopic ATM 6.3 – Wake turbulence longitudinal separation

ADV ATM 6.3.1	Provide time-based wake turbulence separation.	4	ICAO Doc 4444
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##### Subtopic ATMB 6.4 – Reduced separation minima

ADV ATM 6.4.1	Provide reduced separation minima.	4	ICAO Doc 4444
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<b>TOPIC ATM 7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS</b>			
<b>Subtopic ATM 7.1 – Airborne collision avoidance systems</b>			
ADV ATM 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, GPWS
<b>Subtopic ATM 7.2 – Ground-based safety nets</b>			
ADV ATM 7.2.1	Respond to available ground-based safety nets warnings.	3	<i>Optional content: Anti-incursion</i>
<b>TOPIC ATM 8 DATA DISPLAY</b>			
<b>Subtopic ATM 8.1 – Data management</b>			
ADV ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	<i>Optional content: Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs</i>
ADV ATM 8.1.2	Analyse pertinent data on data displays.	4	
ADV ATM 8.1.3	Organise pertinent data on data displays.	4	
ADV ATM 8.1.4	Process pertinent data on data displays.	3	
ADV ATM 8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information <i>Optional content: RPL, AFIL, etc.</i>
ADV ATM 8.1.6	Use flight plan information.	3	
<b>TOPIC ATM 9 OPERATIONAL ENVIRONMENT</b>			
<b>Subtopic ATM 9.1 – Integrity of the operational environment</b>			
ADV ATM 9.1.1	Obtain information concerning the operational environment.	3	<i>Optional content: Briefing, notices, local orders, verification of information</i>
ADV ATM 9.1.2	Ensure the integrity of the operational environment.	4	<i>Optional content: Frequency, VOLMET, ATIS, SIGMET, Systems set-up, Integrity of displays</i>
<b>Subtopic ATM 9.2 – Verification of the currency of operational procedures</b>			
ADV ATM 9.2.1	Check all relevant documentation before managing traffic.	3	<i>Optional content: Briefing, LOAs, NOTAM, AICs</i>
<b>Subtopic ATM 9.3 – Handover-takeover</b>			
ADV ATM 9.3.1	Transfer information to the relieving controller.	3	
ADV ATM 9.3.2	Obtain information from the controller handing over.	3	

<b>TOPIC ATM 10 PROVISION OF AN AERODROME CONTROL SERVICE</b>			
<b>Subtopic ATM 10.1 – Responsibility for the provision</b>			
ADV ATM 10.1.1	Explain the responsibility for the provision of an aerodrome control service.	2	ICAO Doc 4444, ICAO Annex 11
ADV ATM 10.1.2	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444
ADV ATM 10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444
ADV ATM 10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444
<b>Subtopic ATM 10.2 – Functions of aerodrome control tower</b>			
ADV ATM 10.2.1	Manage the general functions of aerodrome control.	4	ICAO Doc 4444
ADV ATM 10.2.2	Manage the suspension of VFR operations.	4	ICAO Doc 4444
<b>Subtopic ATM 10.3 – Aeronautical ground lights</b>			
ADV ATM 10.3.1	Select appropriate aeronautical ground lights.	5	ICAO Doc 4444
<b>Subtopic ATM 10.4 – Information to aircraft by aerodrome control tower</b>			
ADV ATM 10.4.1	Provide information related to the operation of aircraft.	4	ICAO Doc 4444
ADV ATM 10.4.2	Provide information on aerodrome conditions.	4	ICAO Doc 4444
<b>Subtopic ATM 10.5 – Control of aerodrome traffic</b>			
ADV ATM 10.5.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	ICAO Doc 4444
ADV ATM 10.5.2	Manage traffic on the manoeuvring area.	4	ICAO Doc 4444, Aircraft, vehicles <i>Optional content: runway inspection</i>
ADV ATM 10.5.3	Manage traffic in accordance with procedural changes.	4	<i>Optional content: Taxiway closure</i>
ADV ATM 10.5.4	Ensure an adequate priority of actions.	4	Formal and situational requirements, Workload
<b>Subtopic ATM 10.6 – Control of traffic in the traffic circuit</b>			
ADV ATM 10.6.1	Manage traffic in the traffic circuit.	4	ICAO Doc 4444 Meteorological phenomena, Geographical knowledge, Environmental factors
ADV ATM 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 ATM 10.6.3	Integrate the serviceability of radio aids in	4	<i>Optional content: UDF, VDF, MLS, ILS, NDB, VOR,</i>

	the management of aerodrome traffic.		<i>DME</i>
ADV ATM 10.6.4	Integrate surface conditions into the control of aerodrome traffic.	4	<i>Optional content: Damp, Wet, Water patches, Flooding, Snow, Slush, Ice, Braking action</i>
ADV ATM 10.6.5	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	<i>Optional content: Clouds, Precipitation, Visibility, Wind, Meteorological hazards</i>
ADV ATM 10.6.6	Integrate the information provided by situation displays.	4	Use, Advantages, Disadvantages
<b>Subtopic ATM 10.7 – Runway in use</b>			
ADV ATM 10.7.1	Select the runway in use.	5	ICAO Doc 4444
ADV ATM 10.7.2	Coordinate runway in use.	4	<i>Optional content: Approach control, Area control, runway selection, change of runway</i>
ADV ATM 10.7.3	Manage traffic in the event of runway-in-use change.	4	

## Subject 4: METEOROLOGY

<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic MET 1.1 – Meteorological phenomena</b>			
ADV MET 1.1.1	Appreciate the impact of different cloud types.	3	Cumulus, Cumulonimbus <i>Optional content: Stratus, Nimbostratus, etc.</i>
ADV MET 1.1.2	Appreciate the impact of precipitation.	3	Precipitation and Microphysics <i>Optional content: Rain, Snow, Sleet, Hail</i>
ADV MET 1.1.3	Appreciate the impact of atmospheric obscurity.	3	<i>Optional content: Advection fog, Radiation fog, Mixing, Evaporation, Mist, Drizzle</i>
ADV MET 1.1.4	Appreciate the effect and impact of wind.	3	Gusting, Veering, Backing <i>Optional content: Land breezes, Sea breezes, Föhn</i>
ADV MET 1.1.5	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Wind shear, Turbulence, Thunderstorms, Icing, Microbursts
ADV MET 1.1.6	Appreciate the effect of a frontal system on aerodrome operations.	3	
<b>TOPIC MET 2 SOURCES OF METEOROLOGICAL DATA</b>			
<b>Subtopic MET 2.1 – Meteorological instruments</b>			
ADV MET 2.1.1	Extract information from meteorological instruments.	3	<i>Optional content: Anemometer, RVR indicator, Cloud base indicator, Barometer</i>
<b>Subtopic MET 2.2 – Other sources of meteorological data</b>			
ADV MET 2.2.1	Decode information from meteorological data displays.	3	
ADV MET 2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3	
ADV MET 2.2.3	Relay meteorological information from pilot reports.	3	ICAO Doc 4444

## Subject 5: NAVIGATION

### TOPIC NAV 1 MAPS AND AERONAUTICAL CHARTS

<b>Subtopic NAV 1.1 – Maps and charts</b>			
ADV NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Visual approach charts, Instrument approach charts, Aerodrome charts <i>Optional content: Military maps and charts</i>
ADV NAV 1.1.2	Use relevant maps and charts.	3	Visual approach/departure charts, Aerodrome charts <i>Optional content: Military maps and charts</i>

### TOPIC NAV 2 INSTRUMENTAL NAVIGATION

<b>Subtopic NAV 2.1 – Navigational systems</b>			
ADV NAV 2.1.1	Describe the possible operational status of navigational systems.	2	<i>Optional content: NDB, VOR, DME</i>
ADV NAV 2.1.2	Decode operational status displays of navigational systems.	3	<i>Optional content: NDB, VOR, DME</i>
ADV NAV 2.1.3	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	
ADV NAV 2.1.4	Manage traffic in case of change in the operational status of navigational systems.	4	<i>Optional content: limitations, status of ground-based system</i>

## Subject 6: AIRCRAFT

<b>TOPIC ACFT 1 AIRCRAFT INSTRUMENTS</b>			
<b>Subtopic ACFT 1.1 – Aircraft instruments</b>			
ADV ACFT 1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	<i>Optional content: TCAS, wind shear indicator, weather radar</i>
ADV ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	<i>Optional content: Radios (number of), emergency radios, SELCAL</i>
ADV ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability
ADV ACFT 1.1.4	Explain the use and benefits of CPDLC.	2	
<b>TOPIC ACFT 2 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFT 2.1 – Wake turbulence categories</b>			
ADV ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2	
ADV ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3	
<b>TOPIC ACFT 3 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>			
<b>Subtopic ACFT 3.1 – Take-off factors</b>			
ADV ACFT 3.1.1	Integrate the influence of factors affecting aircraft on take-off.	4	<i>Optional content: Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass</i>
<b>Subtopic ACFT 3.2 – Climb factors</b>			
ADV ACFT 3.2.1	Appreciate the influence of factors affecting aircraft during climb.	3	<i>Optional content: speed, mass, air density, wind and temperature</i>
<b>Subtopic ACFT 3.3 – Final approach and landing factors</b>			
ADV ACFT 3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	<i>Optional content: wind, aircraft configuration, mass, runway conditions, runway slope, aerodrome elevation</i>
<b>Subtopic ACFT 3.4 – Economic factors</b>			
ADV ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	<i>Optional content: Starting-up, Taxiing, Routing, Departure sequence</i>
<b>Subtopic ACFT 3.5 – Miscellaneous factors</b>			
ADV ACFT 3.5.1	Appreciate the influence of operational requirements.	3	<i>Optional content: Military flying, Calibration flights,</i>

			<i>Aerial photography</i>
<b>Subtopic ACFT 3.6 – Environmental factors</b>			
ADV ACFT 3.6.1	Estimate the influence of ecological factors affecting aircraft.	3	<i>Optional content: Noise abatement procedures, Minimum flight altitudes, Bird hazard</i>
<b>TOPIC ACFTB 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFT 4.1 – Recognition of aircraft types</b>			
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 <i>Optional content: ICAO Approach Categories</i>
<b>Subtopic ACFT 4.2 – Performance data</b>			
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 ACFT 4.2.2	Identify potential or actual emergency situations.	3	

## Subject 7: HUMAN FACTORS

<b>TOPIC HUM 1 PSYCHOLOGICAL FACTORS</b>			
<b>Subtopic HUM 1.1 – Cognitive</b>			
ADV HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response
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
ADV HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	<i>Optional content:</i> workload, stress, interpersonal relations, distraction, confidence
<b>TOPIC HUM 2 MEDICAL AND PHYSIOLOGICAL FACTORS</b>			
<b>Subtopic HUM 2.1 – Fatigue</b>			
ADV HUM 2.1.1	State factors that cause fatigue.	1	Shift work <i>Optional content:</i> night shifts and rosters
ADV HUM 2.1.2	Describe the onset of fatigue.	2	<i>Optional content:</i> Lack of concentration, Listlessness, Irritability, Frustration
ADV HUM 2.1.3	Recognise the onset of fatigue in self.	1	
ADV HUM 2.1.4	Recognise the onset of fatigue in others.	1	
ADV HUM 2.1.5	Consider appropriate action when recognising fatigue.	2	
<b>Subtopic HUM 2.2 – Fitness</b>			
ADV HUM 2.2.1	Recognise signs of lack of personal fitness.	1	
ADV HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2	
<b>TOPIC HUM 3 SOCIAL AND ORGANISATIONAL FACTORS</b>			
<b>Subtopic HUM 3.1 – Team resource management (TRM)</b>			
ADV HUM 3.1.1	State the objectives of TRM.	1	<i>Optional content:</i> TRM course, EUROCONTROL Guidelines for the development of TRM training
ADV HUM 3.1.2	State the content of the TRM concept.	1	<i>Optional content:</i> team work, human error, team roles, stress, decision making, communication, situational awareness

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

ADV HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy
ADV HUM 5.1.6	Execute corrective actions.	3	Error compensation
<b>Subtopic HUM 5.2 – Violation of rules</b>			
ADV HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	
<b>TOPIC HUM 6 WORKING METHODS</b>			
<b>Subtopic HUM 6.1 – Efficiency</b>			
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	<i>Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety</i>
<b>TOPIC HUM 7 WORKING KNOWLEDGE</b>			
<b>Subtopic HUM 7.1 – Controller knowledge</b>			
ADV HUM 7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	<i>Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET</i>
<b>TOPIC HUM 8 COLLABORATIVE WORK</b>			
<b>Subtopic HUM 8.1 – Communication</b>			
ADV HUM 8.1.1	Use communication effectively in ATC.	3	
<b>Subtopic HUM 8.2 – Collaborative work within the same area of responsibility</b>			
ADV HUM 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	<i>Optional content: Electronic, written, verbal and non-verbal communication</i>
ADV HUM 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	<i>Optional content: Strips legibility and encoding, labels designation, Feedback</i>
ADV HUM 8.2.3	List possible actions to provide a safe position handover.	1	<i>Optional content: rigour, preparation, overlap time</i>
ADV HUM 8.2.4	Explain consequences of a missed position handover process.	2	
<b>Subtopic HUM 8.3 – Collaborative work between different areas of responsibility</b>			
ADV HUM 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	<i>Optional content: Other sectors constraints, electronic coordination tools</i>
<b>Subtopic HUM 8.4 – Controller/pilot cooperation</b>			
ADV HUM 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	<i>Optional content: workload, mutual knowledge, controller vs</i>

			<i>pilot mental picture</i>
<b>TOPIC HUM 9 WORK ENVIRONMENT</b>			
<b>Subtopic HUM 9.1 – Ergonomics</b>			
ADV HUM 9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3	
<b>TOPIC HUM 10 ATC SAFETY MANAGEMENT</b>			
<b>Subtopic HUM 10.1 – Experience feedback</b>			
ADV HUM 10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	<i>Optional content: voluntary reporting</i>
ADV HUM 10.1.2	Describe how reported occurrences are analysed.	2	<i>Optional content: ESARR 2, local procedures</i>
ADV HUM 10.1.3	Name the means used to disseminate recommendations.	1	<i>Optional content: Safety letters, safety boards web pages</i>
ADV HUM 10.1.4	Explain the 'Just Culture' concept.	2	<b>Benefits, prerequisites, constraints</b> <i>Optional content: EAM 2 GUI 6, GAIN Report</i>
<b>Subtopic HUM 10.2 – Safety Investigation Branch</b>			
ADV HUM 10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2	
ADV HUM 10.2.2	Define working methods of Safety Investigation Branch.	1	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPS 1 VOICE COMMUNICATIONS</b>			
<b>Subtopic EQPS 1.1 – Radio communications</b>			
ADV EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures <i>Optional content: Frequency selection, Standby equipment</i>
ADV EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	<i>Optional content: Indicator lights, Serviceability displays, Selector/frequency displays</i>
<b>Subtopic EQPS 1.2 – Other voice communications</b>			
ADV EQPS 1.2.1	Operate landline communications.	3	<i>Optional content: telephone, interphone and intercom equipment</i>
<b>TOPIC EQPS 2 AUTOMATION IN ATS</b>			
<b>Subtopic EQPS 2.1 – Aeronautical fixed telecommunication network (AFTN)</b>			
ADV EQPS 2.1.1	Decode AFTN messages.	3	<i>Optional content: Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>
<b>Subtopic EQPS 2.2 – Automatic data interchange</b>			
ADV EQPS 2.2.1	Use automatic data transfer equipment where available.	3	<i>Optional content: Sequencing systems, Automated information and coordination, OLDI</i>
<b>TOPIC EQPS 3 CONTROLLER WORKING POSITION</b>			
<b>Subtopic EQPS 3.1 – Operation and monitoring of equipment</b>			
ADV EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities
ADV EQPS 3.1.2	Operate the equipment of the controller working position.	3	<i>Optional content: Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>
ADV EQPS 3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3	
<b>Subtopic EQPS 3.2 – Situation displays and information systems</b>			
ADV EQPS 3.2.1	Use situation displays.	3	
ADV EQPS 3.2.2	Check availability of information material.	3	
ADV EQPS 3.2.3	Obtain information from equipment.	3	<i>Optional content: information from wind direction indicator</i>

ADV EQPS 3.2.4	Take account of anti-incursion equipment.	2	
<b>Subtopic EQPS 3.3 – Flight data systems</b>			
ADV EQPS 3.3.1	Use the flight data information at controller working position.	3	
<b>TOPIC EQPS 4 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPS 4.1 – New developments</b>			
ADV EQPS 4.1.1	Recognise future developments.	1	New advanced systems
<b>TOPIC EQPS 5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION</b>			
<b>Subtopic EQPS 5.1 – Reaction to limitations</b>			
ADV EQPS 5.1.1	Take account of the limitations of equipment and systems.	2	
ADV EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities
<b>Subtopic EQPS 5.2 – Communication equipment degradation</b>			
ADV EQPS 5.2.1	Identify that communication equipment has degraded.	3	<i>Optional content: Ground-air, ground-ground and landline communications</i>
ADV EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	<i>Optional content: total or partial degradation of ground-air, ground-ground and landline communications; Alternative methods of transferring data</i>
<b>Subtopic EQPS 5.3 – Navigational equipment degradation</b>			
ADV EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	<i>Optional content: VOR, Navigational aids</i>
ADV EQPS 5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	<i>Optional content: Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units</i>

**Subject 9: PROFESSIONAL ENVIRONMENT**

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

### Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

<b>TOPIC UDES 1 UNUSUAL/DEGRADED/EMERGENCY SITUATIONS (UDES)</b>			
<b>Subtopic UDES 1.1 – Overview of UDES</b>			
ADV UDES 1.1.1	List common unusual/degraded/emergency situations.	1	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion</i>
ADV UDES 1.1.2	Take into account the procedures for given unusual/degraded/emergency situations.	2	
ADV UDES 1.1.3	Take into account that procedures don't exist for all unusual/degraded/emergency situations.	2	<i>Optional content: real life examples</i>
ADV UDES 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	<i>Optional content: Separation, Information, Coordination</i>
<b>TOPIC UDES 2 SKILLS IMPROVEMENT</b>			
<b>Subtopic UDES 2.1 – Communication effectiveness</b>			
ADV UDES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Readback, Silence instruction
ADV UDES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444
<b>Subtopic UDES 2.2 – Avoidance of mental overload</b>			
ADV UDES 2.2.1	Describe actions to keep the control of the situation.	2	<i>Optional content: sector splitting, holding, flow management, task delegation</i>
ADV UDES 2.2.2	Organise priority of actions.	4	
ADV UDES 2.2.3	Ensure an effective circulation of information.	4	<i>Optional content: between executive and planner/ coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.</i>
ADV UDES 2.2.4	Consider asking for help.	2	
<b>Subtopic UDES 2.3 – Air/ground cooperation</b>			
ADV UDES 2.3.1	Collect appropriate information relevant for the situation.	3	
ADV UDES 2.3.2	Assist the pilot.	3	Pilot workload <i>Optional content: Instructions, information, support, human factors,</i>

			etc.
<b>TOPIC UDES 3 PROCEDURES FOR UNUSUAL/DEGRADED/EMERGENCY SITUATIONS</b>			
<b>Subtopic UDES 3.1 – Application of procedures for UDES</b>			
ADV UDES 3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations Ambulance flights, GPWS alerts, airframe failure</i>
<b>Subtopic UDES 3.2 – Radio failure</b>			
ADV UDES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	ICAO Doc 7030 <i>Optional content: military procedures</i>
ADV UDES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	<i>Optional content: Prolonged loss of communication</i>
<b>Subtopic UDES 3.3 – Unlawful interference and aircraft bomb threat</b>			
ADV UDES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444
<b>Subtopic UDES 3.4 – Strayed or unidentified aircraft</b>			
ADV UDES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	ICAO Doc 4444 <i>Optional content: Inside controlled airspace, Outside controlled airspace</i>
ADV UDES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	ICAO Doc 4444
ADV UDES 3.4.3	Provide navigational assistance to aircraft.	4	<i>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.</i>

## Subject 11: AERODROMES

<b>TOPIC AGA 1 AERODROME DATA, LAYOUT AND COORDINATION</b>			
<b>Subtopic AGA 1.1 – Definitions</b>			
ADV AGA 1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 <i>Optional content: AIP</i>
ADV AGA 1.1.2	Define aerodrome data.	1	ICAO Annex 14 <i>Optional content: Aerodrome elevation, Reference point, Apron, Movement area, Manoeuvring area, Hot spot</i>
<b>Subtopic AGA 1.2 – Coordination</b>			
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, ICAO Annex 14
<b>TOPIC AGA 2 MOVEMENT AREA</b>			
<b>Subtopic AGA 2.1 – Movement area</b>			
ADV AGA 2.1.1	Describe movement area.	2	ICAO Annex 14
ADV AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights
ADV AGA 2.1.3	Identify the information on conditions of the movement area that has to be passed to aircraft.	3	Essential information on aerodrome conditions
<b>Subtopic AGA 2.2 – Manoeuvring area</b>			
ADV AGA 2.2.1	Describe manoeuvring area.	2	ICAO Annex 14
ADV AGA 2.2.2	Describe taxiway.	2	
ADV AGA 2.2.3	Describe the daylight marking on taxiways.	2	
ADV AGA 2.2.4	Describe taxiway lighting.	2	
<b>Subtopic AGA 2.3 – Runways</b>			
ADV AGA 2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways
ADV AGA 2.3.2	Describe instrument runway.	2	ICAO Annex 14
ADV AGA 2.3.3	Describe non-instrument runway.	2	ICAO Annex 14

ADV AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA
ADV AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements
ADV AGA 2.3.6	Describe the daylight markings on runways.	2	<i>Optional content: Runway Designator, Centre line, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour</i>
ADV AGA 2.3.7	Describe runway lights.	2	<i>Optional content: Colour, Centre line, Intensity, Edge, Touchdown zone, Threshold, Barettes</i>
ADV AGA 2.3.8	Explain the functions of visual landing aids.	2	<i>Optional content: AVASI, VASI, PAPI</i>
ADV AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, Stroboscopic lights, Colours, Intensity and brightness
ADV AGA 2.3.10	Characterise the effect of water/ice on runways.	2	
ADV AGA 2.3.11	Explain braking action.	2	Braking action coefficient
ADV AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation	2	

### TOPIC AGA 3 OBSTACLES

#### Subtopic AGA 3.1 – Obstacle-free airspace around aerodromes

ADV AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2	
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### TOPIC AGA 4 MISCELLANEOUS EQUIPMENT

#### Subtopic AGA 4.1 – Location

ADV AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	<i>Optional content: LLZ, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI</i>
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**Supplements**

## Supplement 1

### SYLLABI STRUCTURE - HOW TO READ THE TABLES

#### 1. Structure of the Rating training syllabi

- a. Each Rating training has been structured as a syllabus, as follows:
  - i. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - ii. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 4 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(2)(i) Aerodrome Control Visual Rating — ADV)

<b>Subject 4 : METEOROLOGY</b>			<b>Subject</b>
<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			<b>Topic</b>
<b>Sub-topic MET 1.1 - Meteorological phenomena</b>			<b>Sub -topic</b>
ACS (RAD) MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Jetstreams, Clear Air Turbulence (CAT), Turbulence, Microburst, Severe mountain waves, Line squalls <i>Optional content: Volcanic ash, Solar radiation</i>
ACS (RAD) MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	<i>Optional content: Separation, holding, diversions, re-routings, etc</i>
ACS (RAD) MET 1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	<i>Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash</i>

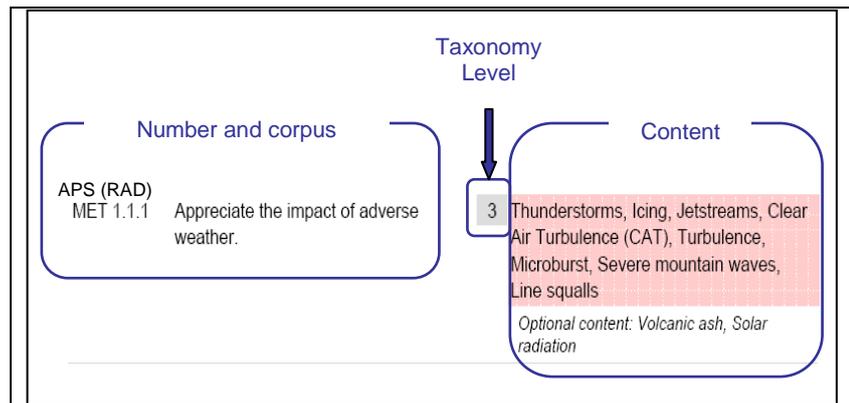
**Figure 1: Layout of syllabus**

- b. The following principles may be applied to the development of a training course that is based on any of the syllabi:
  - i. The structure of the syllabi and the order of the objectives contained within Appendix 4 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - ii. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - iii. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter time to be taught than another Subtopic containing two complex objectives.

#### 2. Structure of objectives

- a. An objective consists of three elements:
  - i. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- ii. The level, which indicates numerically the taxonomy of the action verb.
- iii. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

### 3. Common Objectives

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

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

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

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

- d. As a general principle, the rating subject Human Factors is identical in each Rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need only be taught once. If a learner is acquiring an additional rating, he/she would not be required to repeat the Human Factors objectives.

4. **Action verbs that support the Taxonomy for training objectives:**

- a. The five taxonomy levels should be understood to have the following levels of complexity:
- b. Action verbs for Level 1

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

<b>L1 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

c. Action verbs for Level 2

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

<b>L2 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences	Differentiate between different

	between things	types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

## d. Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination).
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
		display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure distance on a map
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to	Scan data display

L3 Verb	Definition	Example
	extract relevant data	
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

## e. Action verbs for Level 4

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

L4 Verb	Definition	Example
<b>Acquire</b>	Gain by oneself and for oneself, obtain after research	Acquire relevant aeronautical information
<b>Adjust</b>	Change to a new position, value or setting	Adjust the surveillance system display
<b>Allocate</b>	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
<b>Analyse</b>	Examine minutely the constitution of	Analyse examples of pilot and controller communication for effectiveness. Analyse the information provided by the radar equipment.
<b>Assign</b>	Allot as a share, make over	Assign codes.
<b>Coordinate</b>	Bring part into proper relation	Coordinate runway in use. Coordinate in the provision of FIS.
<b>Comply</b>	Act in accordance with	Comply with rules
<b>Delegate</b>	Commit authority to somebody	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
<b>Detect</b>	Discover existence of	Detect potential conflict
<b>Ensure</b>	Make safe, make certain	Ensure the agreed course of action is carried out
<b>Expedite</b>	Assist the progress of, do speedily	Expedite traffic
<b>Integrate</b>	Combine into a whole, complete by addition of	Integrate appropriate ATC clearances in control service.

L4 Verb	Definition	Example
	parts	
<b>Manage</b>	Handle, wield, conduct	Manage traffic on the manoeuvring area. Manage traffic in accordance with procedural changes.
<b>Organise</b>	Give orderly structure to, frame and put into working order	Organise pertinent data on data displays. Organise priority of actions.
<b>Predict</b>	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
<b>Provide</b>	Supply, furnish	Provide radar separation. Provide FIS.
<b>Relate</b>	Establish link with	Relate a pressure setting to an altitude

## f. Action verbs for Level 5

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

L5 verb	Definition	Example
<b>Assess</b>	Estimate value or difficulty, evaluate, appraise	Assess workload
<b>Balance</b>	Weigh (a question, two arguments, etc., against each other)	Balance the workload with the traffic demand.
<b>Discuss</b>	Investigate by reasoning or argument	Discuss the impact of regulation.
<b>Evaluate</b>	Ascertain amount of, find numerical expression for	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
<b>Interpret</b>	To decide on something's meaning or significance when there is a choice	Interpret operational information.
<b>Resolve</b>	Solve, clear up, settle	Resolve conflict
<b>Select</b>	Pick out as best or most suitable	Select the runway in use
<b>Theorise</b>	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft
<b>Validate</b>	Make valid, ratify, prove valid, show or confirm the validity of something	Validate one radar vectoring option to expedite the traffic

- g. Application of taxonomy levels to practically-based objectives
- i. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.
  - ii. Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radio telephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part task trainer or a simulator.
  - iii. ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.
  - iv. ATM level 5 objectives should be achieved through the use of a simulator.
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## Supplement 2

### Abbreviations

For the purposes of these AMCs, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Area Control Procedural Rating
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACS	Area Control Surveillance Rating
ADF	Automatic Direction Finding System
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air Filed Flight Plan
AFTN	Aeronautical fixed telecommunication network
AGA	Aerodromes
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management

ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
B-RNAV	Basic Area Navigation
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear Air Turbulence
CBA	Cross Border Area
CBT	Computer Based Training
CCIS	Closed Circuit Information System
CDR	Conditional Route
CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
CPL	Current Flight Plan
D-GPS	Differential Global Positioning System
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EAM	ESARR Advisory Material
EASA	European Aviation Safety Agency
EAT	Expected Approach Time
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Overlay Service
EQPS	Equipment and Systems (subject)

ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan
FUA	Flexible Use of Airspace
GAIN Report	Global Aviation Information Network Report
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GUI	Guidelines
HBK	Handbook
HF	High Frequency
HUM	Human Factors (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union

LAW	Aviation Law (subject)
LDA	Landing Distance Available
LLZ	Localizer
LNAV	Lateral Navigation
LOA	Letter of Agreement
LPV	Lateral Precision with Vertical guidance approach
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
OLDI	On-Line Data Interchange
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PEN	Professional Environment (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring

RCC	Rescue Coordination Centre
RDPS	Radar Data Processing System
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb
RPL	Stored Flight Plan
RTF	Radio Telephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
SVFR	Special Visual Flight Rules Flight
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TODA	Take Off Distance Available
TORA	Take Off Run Available
TRM	Team Resource Management
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDES	Unusual Degraded Emergency Situations
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency

UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84

**ANNEX 1 – PART-ATCO****SUBPART D – ATCO TRAINING****Section 2 – Initial training requirements for Air Traffic Controllers****AMC1 to Appendix 5 –  
Aerodrome Control Instrument Rating for Tower ADI (TWR)**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. ATCO Rating training Aerodrome Control Instrument Rating for Tower – ADI (TWR) should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 5 – Aerodrome Control Instrument Rating for Tower – ADI (TWR)**.
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTR 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTR 1.1 – Course introduction</b>			
ADI (TWR) INTR 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTR 1.2 – Course administration</b>			
ADI (TWR) INTR 1.2.1	State course administration.	1	
<b>Subtopic INTR 1.3 – Study material and training documentation</b>			
ADI (TWR) INTR 1.3.1	Use appropriate documentation and their sources for the course studies.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
ADI (TWR) INTR 1.3.2	Integrate appropriate information into course studies.	4	<i>Optional content: Training documentation, supplementary information, library</i>
<b>TOPIC INTR 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTR 2.1 – Course content and organisation</b>			
ADI (TWR) INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
ADI (TWR) INTR 2.1.2	State the subjects of the course and their purpose.	1	
ADI (TWR) INTR 2.1.3	Describe the organisation of theoretical training.	2	
ADI (TWR) INTR 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTR 2.2 – Training ethos</b>			
ADI (TWR) INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor /instructor feedback
<b>Subtopic INTR 2.3 – Assessment process</b>			
ADI (TWR) INTR 2.3.1	Describe the assessment process.	2	

**Subject 2: AVIATION LAW**

<b>TOPIC LAW 1 ATC LICENSING/CERTIFICATE OF COMPETENCE</b>			
<b>Subtopic LAW 1.1 - Privileges and conditions</b>			
ADI (TWR) LAW 1.1.1	Appreciate the conditions which must be met for the issue of Aerodrome Control Instrument rating with Tower Control endorsement.	3	Commission Regulation (EU) No 805/2011 <i>Optional content: National documents</i>
ADI (TWR) LAW 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	Commission Regulation (EU) No 805/2011
<b>TOPIC LAW 2 RULES AND REGULATIONS</b>			
<b>Subtopic LAW 2.1 – Reports</b>			
ADI (TWR) LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report <i>Optional content: routine air reports, breach of regulations, watch/log book, records</i>
ADI (TWR) LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	Reporting culture, Air traffic incident report <i>Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2</i>
ADI (TWR) LAW 2.1.3	Use forms for reporting.	3	Air traffic incident reporting form(s) <i>Optional content: ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records</i>
<b>Subtopic LAW 2.2 – Airspace</b>			
ADI (TWR) LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Aerodrome Control Visual Instrument rating with Tower Control endorsement operations.	3	
ADI (TWR) LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	<i>Optional content: ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation</i>
ADI (TWR) LAW 2.2.3	Appreciate responsibility for terrain clearance.	3	

### Subject 3: AIR TRAFFIC MANAGEMENT

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

<b>TOPIC ATM 2 COMMUNICATION</b>			
<b>Subtopic ATM 2.1 – Effective communication</b>			
ADI (TWR) ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 <i>Optional content: ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2</i>
ADI (TWR) ATM 2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback
ADI (TWR) ATM 2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4	
<b>TOPIC ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS</b>			
<b>Subtopic ATM 3.1 – ATC clearances</b>			
ADI (TWR) ATM 3.1.1	Issue appropriate ATC clearances.	3	
ADI (TWR) ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4	
ADI (TWR) ATM 3.1.3	Ensure the agreed course of action is carried out.	4	
<b>Subtopic ATM 3.2 – ATC instructions</b>			
ADI (TWR) ATM 3.2.1	Issue appropriate ATC instructions.	3	
ADI (TWR) ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4	
ADI (TWR) ATM 3.2.3	Ensure the agreed course of action is carried out.	4	
<b>TOPIC ATM 4 COORDINATION</b>			
<b>Subtopic ATM 4.1 – Necessity for coordination</b>			
ADI (TWR) ATM 4.1.1	Identify the need for coordination.	3	
<b>Subtopic ATM 4.2 – Tools and methods for coordination</b>			
ADI (TWR) ATM 4.2.1	Use the available tools for coordination.	3	<i>Optional content: Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination</i>
<b>Subtopic ATM 4.3 – Coordination procedures</b>			
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 <i>Optional content: release point</i>
ADI (TWR) ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>Optional content: Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>
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.
ADI (TWR) ATM 4.3.4	Ensure the agreed course of action is carried out.	4	
ADI (TWR) ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444
ADI (TWR) ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444

### TOPIC ATM 5 ALTIMETRY AND LEVEL ALLOCATION

#### Subtopic ATM 5.1 – Altimetry

ADI (TWR) ATM 5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168
ADI (TWR) ATM 5.1.2	Ensure separation according to altimetry data.	4	<i>Optional content: Transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries</i>

#### Subtopic ATM 5.2 – Terrain Clearance

ADI (TWR) ATM 5.2.1	Provide planning, coordination and control sections appropriate to the rules for minimum safe height and terrain clearance	4	<i>Optional content: Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude</i>
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### TOPIC ATM 6 SEPARATIONS

#### Subtopic ATM 6.1 – Separation between departing aircraft

ADI (TWR) ATM 6.1.1	Provide separation between departing aircraft.	4	ICAO Doc 4444
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#### Subtopic 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
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<b>Subtopic ATM 6.3 – Separation of landing aircraft and preceding landing or departing aircraft</b>			
ADI (TWR) ATM 6.3.1	Provide separation of landing aircraft and preceding landing or departing aircraft.	4	ICAO Doc 4444
<b>Subtopic ATMB 6.4 – Time-based wake turbulence longitudinal separation</b>			
ADI (TWR) ATM 6.4.1	Provide time-based wake turbulence longitudinal separation.	4	ICAO Doc 4444
<b>Subtopic ATMB 6.5 – Reduced separation minima</b>			
ADI (TWR) ATM 6.5.1	Provide reduced separation minima.	4	ICAO Doc 4444
<b>TOPIC ATM 7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS</b>			
<b>Subtopic ATM 7.1 – Airborne collision avoidance systems</b>			
ADI (TWR) ATM 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS, GPWS
<b>Subtopic ATM 7.2 – Ground-based safety nets</b>			
ADI (TWR) ATM 7.2.1	Respond to available ground-based safety nets warnings.	3	<i>Optional content: Anti-incursion</i>
<b>TOPIC ATM 8 DATA DISPLAY</b>			
<b>Subtopic ATM 8.1 – Data management</b>			
ADI (TWR) ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	<i>Optional content: Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs</i>
ADI (TWR) ATM 8.1.2	Analyse pertinent data on data displays.	4	
ADI (TWR) ATM 8.1.3	Organise pertinent data on data displays.	4	
ADI (TWR) ATM 8.1.4	Process pertinent data on data displays.	3	
ADI (TWR) ATM 8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information <i>Optional content: RPL, AFIL, etc.</i>
ADI (TWR) ATM 8.1.6	Use flight plan information.	3	
<b>TOPIC ATM 9 OPERATIONAL ENVIRONMENT</b>			
<b>Subtopic ATM 9.1 – Integrity of the operational environment</b>			
ADI (TWR) ATM 9.1.1	Obtain information concerning the operational environment.	3	<i>Optional content: Briefing, notices, local orders, verification of information</i>
ADI (TWR) ATM 9.1.2	Ensure the integrity of the operational environment.	4	<i>Optional content: Frequency, VOLMET, ATIS, SIGMET, Systems set-up,</i>

			<i>Integrity of displays</i>
<b>Subtopic ATM 9.2 – Verification of the currency of operational procedures</b>			
ADI (TWR) ATM 9.2.1	Check all relevant documentation before managing traffic.	3	<i>Optional content: Briefing, LOAs, NOTAM, AICs</i>
<b>Subtopic ATM 9.3 – Handover-takeover</b>			
ADI (TWR) ATM 9.3.1	Transfer information to the relieving controller.	3	
ADI (TWR) ATM 9.3.2	Obtain information from the controller handing over.	3	
<b>TOPIC ATM 10 PROVISION OF AN AERODROME CONTROL SERVICE</b>			
<b>Subtopic ATM 10.1 – Responsibility for the provision</b>			
ADI (TWR) ATM 10.1.1	Explain the responsibility for the provision of an aerodrome control service.	2	ICAO Doc 4444, ICAO Annex 11
ADI (TWR) ATM 10.1.2	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444
ADI (TWR) ATM 10.1.3	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444
ADI (TWR) ATM 10.1.4	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444
<b>Subtopic ATM 10.2 – Functions of aerodrome control tower</b>			
ADI (TWR) ATM 10.2.1	Manage the general functions of aerodrome control.	4	ICAO Doc 4444
ADI (TWR) ATM 10.2.2	Manage the suspension of VFR operations.	4	ICAO Doc 4444
<b>Subtopic ATM 10.3 – Aeronautical ground lights</b>			
ADI (TWR) ATM 10.3.1	Select appropriate aeronautical ground lights.	5	ICAO Doc 4444
<b>Subtopic ATM 10.4 – Information to aircraft by aerodrome control tower</b>			
ADI (TWR) ATM 10.4.1	Provide information related to the operation of aircraft.	4	ICAO Doc 4444
ADI (TWR) ATM 10.4.2	Provide information on aerodrome conditions.	4	ICAO Doc 4444
<b>Subtopic ATM 10.5 – Control of aerodrome traffic</b>			
ADI (TWR) ATM 10.5.1	Predict positions of aircraft in the aerodrome traffic and taxi circuits.	4	ICAO Doc 4444
ADI (TWR) ATM 10.5.2	Manage traffic on the manoeuvring area.	4	ICAO Doc 4444, Aircraft, vehicles <i>Optional content: runway inspection</i>
ADI (TWR) ATM 10.5.3	Manage traffic in accordance with procedural changes.	4	<i>Optional content: Taxiway closure</i>
ADI (TWR) ATM 10.5.4	Ensure an adequate priority of actions.	4	Formal and situational requirements, Workload

<b>Subtopic ATM 10.6 – Control of traffic in the traffic circuit</b>			
ADI (TWR) ATM 10.6.1	Manage traffic in the traffic circuit.	4	ICAO Doc 4444 Meteorological phenomena, Geographical knowledge, Environmental factors
ADI (TWR) ATM 10.6.2	Manage arriving and departing traffic.	4	ICAO Doc 4444, Allocation of the order of priority, Meteorological phenomena, Wake turbulence, Environmental factors
ADI (TWR) ATM 10.6.3	Integrate the serviceability of radio aids in the management of aerodrome traffic.	4	<i>Optional content: UDF, VDF, MLS, ILS, NDB, VOR, DME</i>
ADI (TWR) ATM 10.6.4	Integrate surface conditions into the control of aerodrome traffic.	4	<i>Optional content: Damp, Wet, Water patches, Flooding, Snow, Slush, Ice, Braking action</i>
ADI (TWR) ATM 10.6.5	Integrate information about meteorological phenomena into the control of aerodrome traffic.	4	<i>Optional content: Clouds, Precipitation, Visibility, Wind, Meteorological hazards</i>
ADI (TWR) ATM 10.6.6	Integrate the information provided by situation displays.	4	Use, advantages, Disadvantages
<b>Subtopic ATM 10.7 – Runway in use</b>			
ADI (TWR) ATM 10.7.1	Select the runway in use.	5	ICAO Doc 4444
ADI (TWR) ATM 10.7.2	Coordinate runway in use.	4	<i>Optional content: Approach control, Area control, runway selection, change of runway</i>
ADI (TWR) ATM 10.7.3	Manage traffic in the event of runway-in- use change.	4	
<b>TOPIC ATM 11 PROVISION OF AN AERODROME CONTROL - INSTRUMENT</b>			
<b>Subtopic ATM 11.1 – Low visibility operations and special VFR</b>			
ADI (TWR) ATM 11.1.1	Manage SVFR traffic.	4	ICAO Doc 4444,
ADI (TWR) ATM 11.1.2	Describe the Procedures of Low Visibility Operations.	2	ICAO Doc 4444
<b>Subtopic ATM 11.2 – Departing traffic</b>			
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 (TWR) ATM 11.2.2	Interface departure sequence into the control of aerodrome traffic.	4	ICAO Doc 4444
ADI (TWR) ATM 11.2.3	Provide appropriate information to departing traffic.	4	ICAO Doc 4444, Use of situation displays, Wake

			turbulence
<b>Subtopic ATM 11.3 – Arriving traffic</b>			
ADI (TWR) ATM 11.3.1	Manage control of arrivng aircraft.	4	ICAO Doc 4444, Wake turbulence,
ADI (TWR) ATM 11.3.2	Integrate the approach sequence into the control of aerodrome traffic.	4	ICAO Doc 4444
ADI (TWR) ATM 11.3.3	Integrate aircraft on visual approach into the aerodrome traffic.	4	ICAO Doc 4444
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 (TWR) ATM 11.3.5	Appreciate expected approach times.	3	ICAO Doc 4444
ADI (TWR) ATM 11.3.6	Integrate aircraft performing circling approach into the aerodrome traffic.	3	ICAO Doc 8168
ADI (TWR) ATM 11.3.7	Provide appropriate information to arriving aircraft.	4	ICAO Doc 4444

**Subject 4: METEOROLOGY**

<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic MET 1.1 – Meteorological phenomena</b>			
ADI (TWR) MET 1.1.1	Appreciate the impact of different cloud types.	3	Cumulus, Cumulonimbus <i>Optional content: Stratus, Nimbostratus, etc.</i>
ADI (TWR) MET 1.1.2	Appreciate the impact of precipitation.	3	Precipitation and Microphysics <i>Optional content: Rain, Snow, Sleet, Hail</i>
ADI (TWR) MET 1.1.3	Appreciate the impact of atmospheric obscurity.	3	<i>Optional content: advection fog, Radiation fog, Mixing, Evaporation, Mist, Drizzle</i>
ADI (TWR) MET 1.1.4	Appreciate the effect and impact of wind.	3	Gusting, Veering, Backing <i>Optional content: Land breezes, Sea breezes, Föhn</i>
ADI (TWR) MET 1.1.5	Appreciate the effect and danger of hazardous meteorological phenomena.	3	Wind shear, Turbulence, Thunderstorms, Icing, Microbursts
ADI (TWR) MET 1.1.6	Appreciate the effect of a frontal system on aerodrome operations.	3	
<b>TOPIC MET 2 SOURCES OF METEOROLOGICAL DATA</b>			
<b>Subtopic MET 2.1 – Meteorological instruments</b>			
ADI (TWR) MET 2.1.1	Extract information from meteorological instruments.	3	<i>Optional content: Anemometer, RVR indicator, Cloud base indicator, Barometer</i>
<b>Subtopic MET 2.2 – Other sources of meteorological data</b>			
ADI (TWR) MET 2.2.1	Decode information from meteorological data displays.	3	
ADI (TWR) MET 2.2.2	Use appropriate communication tools and networks to obtain meteorological data.	3	
ADI (TWR) MET 2.2.3	Relay meteorological information from pilot reports.	3	ICAO Doc 4444

## Subject 5: NAVIGATION

<b>TOPIC NAV 1 MAPS AND AERONAUTICAL CHARTS</b>			
<b>Subtopic NAV 1.1 – Maps and charts</b>			
ADI (TWR) NAV 1.1.1	Decode symbols and information displayed on aeronautical maps and charts.	3	Visual approach charts, Instrument approach charts, Aerodrome charts <i>Optional content: Military maps and charts</i>
ADI (TWR) NAV 1.1.2	Use relevant maps and charts.	3	Visual approach charts, Instrument approach charts, SID charts, Aerodrome charts <i>Optional content: Military maps and charts</i>
<b>TOPIC NAV 2 INSTRUMENTAL NAVIGATION</b>			
<b>Subtopic NAV 2.1 – Navigational systems</b>			
ADI (TWR) NAV 2.1.1	Describe the possible operational status of navigational systems.	2	<i>Optional content: NDB, VOR, DME, ILS, MLS, ABAS, SBAS, GBAS, RNP</i>
ADI (TWR) NAV 2.1.2	Decode operational status displays of navigational systems.	3	<i>Optional content: NDB, VOR, DME, ILS, MLS, D-GPS, RNAV, P-RNAV</i>
ADI (TWR) NAV 2.1.3	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	
ADI (TWR) NAV 2.1.4	Manage traffic in case of change in the operational status of navigational systems.	4	<i>Optional content: limitations, status of ground-based system</i>
<b>Subtopic NAV 2.2 – Satellite-based systems</b>			
ADI (TWR) NAV 2.2.1	State the different operations associated with satellite-based systems.	1	<i>Optional content: NPA, APV-baro VNAV, APV, LPV, Precision approach, ICAO Doc 8168 Vol. 2</i>

## Subject 6: AIRCRAFT

<b>TOPIC ACFT 1 AIRCRAFT INSTRUMENTS</b>			
<b>Subtopic ACFT 1.1 – Aircraft instruments</b>			
ADI (TWR) ACFT 1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	<i>Optional content: TCAS, wind shear indicator, weather radar</i>
ADI (TWR) ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	<i>Optional content: Radios (number of), emergency radios, SELCAL</i>
ADI (TWR) ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability
ADI (TWR) ACFT 1.1.4	Explain the use and benefits of CPDLC.	2	
<b>TOPIC ACFT 2 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFT 2.1 – Wake turbulence categories</b>			
ADI (TWR) ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2	
ADI (TWR) ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3	
<b>Subtopic ACFT 2.2 – ICAO approach categories</b>			
ADI (TWR) ACFT 2.2.1	Describe the use of ICAO approach categories.	2	ICAO Doc 8168
ADI (TWR) ACFT 2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3	
<b>TOPIC ACFT 3 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>			
<b>Subtopic ACFT 3.1 – Take-off factors</b>			
ADI (TWR) ACFT 3.1.1	Integrate the influence of factors affecting aircraft on take-off.	4	<i>Optional content: Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass</i>
<b>Subtopic ACFT 3.2 – Climb factors</b>			
ADI (TWR) ACFT 3.2.1	Appreciate the influence of factors affecting aircraft during climb.	3	<i>Optional content: speed, mass, air density, wind and temperature</i>
<b>Subtopic ACFT 3.3 – Final approach and landing factors</b>			
ADI (TWR) ACFT 3.3.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	<i>Optional content: wind, aircraft configuration, mass, runway conditions, runway slope, aerodrome elevation</i>
<b>Subtopic ACFT 3.4 – Economic factors</b>			

ADI (TWR) ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	<i>Optional content: Starting-up, Taxiing, Routing, Departure sequence</i>
<b>Subtopic ACFT 3.5 – Miscellaneous factors</b>			
ADI (TWR) ACFT 3.5.1	Appreciate the influence of operational requirements.	3	<i>Optional content: Military flying, Calibration flights, Aerial photography</i>
<b>Subtopic ACFT 3.6 – Environmental factors</b>			
ADI (TWR) ACFT 3.6.1	Estimate the influence of ecological factors affecting aircraft.	3	<i>Optional content: Noise abatement procedures, Minimum flight altitudes, Bird hazard</i>
<b>TOPIC ACFTB 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFT 4.1 – Recognition of aircraft types</b>			
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 <i>Optional content: ICAO Approach Categories</i>
<b>Subtopic ACFT 4.2 – Performance data</b>			
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
ADI (TWR) ACFT 4.2.2	Identify potential or actual emergency situations.	3	

## Subject 7: HUMAN FACTORS

<b>TOPIC HUM 1 PSYCHOLOGICAL FACTORS</b>			
<b>Subtopic HUM 1.1 – Cognitive</b>			
ADI (TWR) HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response
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
ADI (TWR) HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	<i>Optional content:</i> workload, stress, interpersonal relations, distraction, confidence
<b>TOPIC HUM 2 MEDICAL AND PHYSIOLOGICAL FACTORS</b>			
<b>Subtopic HUM 2.1 – Fatigue</b>			
ADI (TWR) HUM 2.1.1	State factors that cause fatigue.	1	Shift work <i>Optional content:</i> night shifts and rosters
ADI (TWR) HUM 2.1.2	Describe the onset of fatigue.	2	<i>Optional content:</i> Lack of concentration, Listlessness, Irritability, Frustration
ADI (TWR) HUM 2.1.3	Recognise the onset of fatigue in self.	1	
ADI (TWR) HUM 2.1.4	Recognise the onset of fatigue in others.	1	
ADI (TWR) HUM 2.1.5	Consider appropriate action when recognising fatigue.	2	
<b>Subtopic HUM 2.2 – Fitness</b>			
ADI (TWR) HUM 2.2.1	Recognise signs of lack of personal fitness.	1	
ADI (TWR) HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2	
<b>TOPIC HUM 3 SOCIAL AND ORGANISATIONAL FACTORS</b>			
<b>Subtopic HUM 3.1 – Team resource management (TRM)</b>			
ADI (TWR) HUM 3.1.1	State the objectives of TRM.	1	<i>Optional content:</i> TRM course, EUROCONTROL Guidelines for the development of TRM training
ADI (TWR) HUM 3.1.2	State the content of the TRM concept.	1	<i>Optional content:</i> team work, human error, team roles, stress, decision making, communication, situational awareness

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

ADI (TWR) HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy
ADI (TWR) HUM 5.1.6	Execute corrective actions.	3	Error compensation
<b>Subtopic HUM 5.2 – Violation of rules</b>			
ADI (TWR) HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	
<b>TOPIC HUM 6 WORKING METHODS</b>			
<b>Subtopic HUM 6.1 – Efficiency</b>			
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	<i>Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety</i>
<b>TOPIC HUM 7 WORKING KNOWLEDGE</b>			
<b>Subtopic HUM 7.1 – Controller knowledge</b>			
ADI (TWR) HUM 7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	<i>Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET</i>
<b>TOPIC HUM 8 COLLABORATIVE WORK</b>			
<b>Subtopic HUM 8.1 – Communication</b>			
ADI (TWR) HUM 8.1.1	Use communication effectively in ATC.	3	
<b>Subtopic HUM 8.2 – Collaborative work within the same area of responsibility</b>			
ADI (TWR) HUM 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	<i>Optional content: Electronic, written, verbal and non-verbal communication</i>
ADI (TWR) HUM 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	<i>Optional content: Strips legibility and encoding, labels designation, Feedback</i>
ADI (TWR) HUM 8.2.3	List possible actions to provide a safe position handover.	1	<i>Optional content: rigour, preparation, overlap time</i>
ADI (TWR) HUM 8.2.4	Explain consequences of a missed position handover process.	2	
<b>Subtopic HUM 8.3 – Collaborative work between areas of responsibility</b>			
ADI (TWR) HUM 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions	1	<i>Optional content: Other sectors constraints, electronic coordination tools</i>
<b>Subtopic HUM 8.4 – Controller/pilot cooperation</b>			
ADI (TWR) HUM 8.4.1	Describe parameters affecting controller/pilot cooperation	2	<i>Operational content: workload, mutual knowledge, controller vs pilot mental picture</i>
<b>TOPIC HUM 9 WORK ENVIRONMENT</b>			

<b>Subtopic HUM 9.1 – Ergonomics</b>			
ADI (TWR) HUM 9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3	
<b>TOPIC HUM 10 ACT SAFETY MANAGEMENT</b>			
<b>Subtopic HUM 10.1 – Experience feedback</b>			
ADI (TWR) HUM 10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	<i>Optional content: voluntary reporting</i>
ADI (TWR) HUM 10.1.2	Describe how reported occurrences are analysed.	2	<i>Optional content: ESARR 2, local procedures</i>
ADI (TWR) HUM 10.1.3	Name the means used to disseminate recommendations.	1	<i>Optional content: Safety letters, safety board's web pages.</i>
ADI (TWR) HUM 10.1.4	Explain the 'Just Culture' concept.	2	<b>Benefits, prerequisites, constraints</b> <i>Optional content: EAM 2 GUI 6, GAIN report</i>
<b>Subtopic HUM 10.2 – Safety Investigation Branch</b>			
ADI (TWR) HUM 10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety	2	
ADI (TWR) HUM 10.2.2	Define working methods of Safety Investigation Branch.	1	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPS 1 VOICE COMMUNICATION</b>			
<b>Subtopic EQPS 1.1 – Radio communications</b>			
ADI (TWR) EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures  <i>Optional content: Frequency selection, Standby equipment.</i>
ADI (TWR) EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	<i>Optional content: Indicator lights, Serviceability displays, Selector/frequency displays</i>
<b>Subtopic EQPS 1.2 – Other voice communications</b>			
ADI (TWR) EQPS 1.2.1	Operate landline communications.	3	<i>Optional content: telephone interphone and intercom equipment</i>
<b>TOPIC EQPS 2 AUTOMATION IN ATS</b>			
<b>Subtopic EQPS 2.1 – Aeronautical fixed telecommunication network (AFTN)</b>			
ADI (TWR) EQPS 2.1.1	Decode AFTN messages.	3	<i>Optional content: Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>
<b>Subtopic EQPS 2.2 – Automatic data interchange</b>			
ADI (TWR) EQPS 2.2.1	Use automatic data transfer equipment where available.	3	<i>Optional content: Sequencing systems, Automated information and coordination, OLDI</i>
<b>TOPIC EQPS 3 CONTROLLER WORKING POSITION</b>			
<b>Subtopic EQPS 3.1 – Operation and monitoring of equipment</b>			
ADI (TWR) EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities.
ADI (TWR) EQPS 3.1.2	Operate the equipment of the controller working position.	3	<i>Optional content: situation displays, Flight progress board, Flight data display, Radio Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>
ADI (TWR) EQPS 3.1.3	Operate all available equipment in unusual/degraded/emergency situations	3	
<b>Subtopic EQPS 3.2 – Situation displays and information systems</b>			
ADI (TWR) EQPS 3.2.1	Use situation displays.	3	
ADI (TWR) EQPS 3.2.2	Check availability of information material	3	
ADI (TWR) EQPS 3.2.3	Obtain information from equipment	3	<i>Optional content: information from wind</i>

			<i>direction indicator</i>
ADI (TWR) EQPS 3.2.4	Take account of anti-incursion equipment.	2	
ADI (TWR) EQPS 3.2.5	Explain the use of ASMGCS	2	
<b>Subtopic EQPS 3.3 – Flight data systems</b>			
ADI (TWR) EQPS 3.3.1	Use the flight data information at controller working position.	3	
<b>TOPIC EQPS 4 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPS 4.1 – New developments</b>			
ADI (TWR) EQPS 4.1.1	Recognise future developments.	1	New advanced systems
<b>TOPIC EQPS 5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION</b>			
<b>Subtopic EQPS 5.1 – Reaction to limitations</b>			
ADI (TWR) EQPS 5.1.1	Take account of the limitations of equipment and systems.	2	
ADI (TWR) EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities
<b>Subtopic EQPS 5.2 – Communication equipment degradation</b>			
ADI (TWR) EQPS 5.2.1	Identify that communication equipment has degraded.	3	<i>Optional content: ground-air, ground-ground and landline communications</i>
ADI (TWR) EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	<i>Optional content: total or partial degradation of ground-air, ground-ground and landline communications; Alternative methods of transferring data</i>
<b>Subtopic EQPS 5.3 – Navigational equipment degradation</b>			
ADI (TWR) EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	Optional content: VOR, Navigational aids.
ADI (TWR) 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.

## Subject 9: PROFESSIONAL ENVIRONMENT

<b>TOPIC PEN 1 PROFESSIONAL ENVIRONMENT</b>			
<b>Subtopic PEN 1.1 – Contributors to ATS operations</b>			
ADI (TWR) PEN 1.1.1	Characterise civil and military ATS activities	2	<i>Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, Air defence Units</i>
ADI (TWR) PEN 1.1.2	Charaterise other parties interfacing with ATS operations	2	<i>Optional content: familiarisation visits to engineering services, fire and emergency services, airline operations offices.</i>
<b>Subtopic PEN 1.2 – Customer relations</b>			
ADI (TWR) PEN 1.2.1	Identify the role of ATC as a service provider and requirements for ATS users.	3	<i>Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators.</i>
<b>Subtopic PEN 1.3 – Environmental protection</b>			
ADI (TWR) PEN 1.3.1	Describe processes used to ensure environmental protection.	2	<i>Optional content: night curfews, relations with environmental associations, relevant administrations.</i>

## Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

### TOPIC UDES 1 UNUSUAL/DEGRADED/ EMERGENCY SITUATION (UDES)

#### Subtopic UDES 1.1 Overview of UDES

ADI (TWR) UDES 1.1.1	List common unusual/degraded/emergency situations.	1	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual//Emergency situations, ambulance flights, GPWS alerts, airframe failure, runway incursion</i>
ADI (TWR) UDES 1.1.2	Take into account the procedures for given unusual/degraded/emergency situations.	2	
ADI (TWR) UDES 1.1.3	Take into account that procedures don't exist for all unusual/degraded/emergency situations.	2	<i>Optional content: real life examples</i>
ADI (TWR) UDES 1.1.4	Consider how to evolution of a situation may have an impact on safety.	2	<i>Optional content: Separation, Information, Coordination</i>

### TOPIC UDES 2 SKILLS IMPROVEMENT

#### Subtopic UDES 2.1 Communication effectiveness

ADI (TWR) UDES 2.1.1	Ensure effective communication in all circumstance including the case where standard phraseology is not applicable	4	<i>Phraseology, vocabulary, Readback, Silence instruction</i>
ADI (TWR) UDES 2.1.2	Apply change of radiotelephony call sign.	3	<i>ICAO Doc 4444</i>

#### Subtopic UDES 2.2 Avoidance of mental overload

ADI (TWR) UDES 2.2.1	Describe actions to keep the control of the situation.	2	<i>Optional content: sector splitting, holding, flow management, task delegation</i>
ADI (TWR) UDES 2.2.2	Organise priority of actions	4	
ADI (TWR) UDES 2.2.3	Ensure an effective circulation of information.	4	<i>Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.</i>
ADI (TWR) UDES 2.2.4	Consider asking for help	2	

#### Subtopic UDES 2.3 Air/ground cooperation

ADI (TWR) UDES 2.3.1	Collect appropriate information relevant for the situation.	3	
ADI (TWR) UDES 2.3.2	Assist the pilot	3	<b>Pilot workload</b>  <i>Optional content: Instructions, information, support, human factors, etc.</i>

**TOPIC UDES 3 PROCEDURES FOR UNUSUAL/DEGRADED/EMERGENCY SITUATIONS**

**Subtopic UDES 3.1 Application of procedures for UDES**

ADI (TWR) UDES 3.1.1	Apply the procedures for given unusual/degraded/emergency situations	3	<b>Runway incursion</b>  <i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, Ambulance flights, GPWS alerts airframe failure</i>
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**Subtopic UDES 3.2 Radio failure**

ADI (TWR) UDES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure	2	<b>ICAO Doc 7030</b>  <i>Optional content: military procedures</i>
ADI (TWR) UDES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure	3	<i>Optional content: Prolonged of communication</i>

**Subtopic UDES 3.3 Unlawful interference and aircraft bomb threat**

ADI (TWR) UDES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	<b>ICAO Doc 4444</b>
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**Subtopic UDES 3.4 Strayed or unidentified aircraft**

ADI (TWR) UDES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	<b>ICAO Doc 4444</b>  <i>Optional content: Inside controlled airspace, Outside controlled airspace</i>
ADI (TWR) UDES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	<b>ICAO Doc 4444</b>
ADI (TWR) UDES 3.4.3	Provide navigational assistance to aircraft.	4	<i>Optional content: diverted aircraft, aircraft lost or unsure of position, information derived locally or from radar service or</i>

			<i>from other pilots, Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other relevant navigational assistance, ICAO Doc 4444, etc.</i>
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## Subject 11: AERODROMES

<b>TOPIC AGA 1 AERODROME DATA, LAYOUT AND COORDINATION</b>			
<b>Subtopic AGA 1.1 - Definitions</b>			
ADI (TWR) AGA 1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 <i>Optional content: AIP</i>
ADI (TWR) AGA 1.1.2	Define aerodrome data.	1	ICAO Annex 1 <i>Optional content: Aerodrome elevation Reference point, Apron, Movement area, Manoeuvring area, Hot Spot</i>
<b>Subtopic AGA 1.2 – Coordination</b>			
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, ICAO Annex 14
<b>TOPIC AGA 2 MOVEMENT AREA</b>			
<b>Subtopic AGA 2.1 Movement area</b>			
ADI (TWR) AGA 2.1.1	Describe movement area.	2	ICAO Annex 14
ADI (TWR) AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights
ADI (TWR) AGA 2.1.3	Identify the information on conditions of the movement area that has to be passed to aircraft.	3	Essential information on aerodrome conditions
<b>Subtopic AGA 2.2 Manoeuvring area</b>			
ADI (TWR) AGA 2.2.1	Describe manoeuvring area.	2	ICAO Annex 14
ADI (TWR) AGA 2.2.2	Describe taxiway.	2	
ADI (TWR) AGA 2.2.3	Describe the daylight marking on taxiway.	2	
ADI (TWR) AGA 2.2.4	Describe taxiway lighting.	2	
<b>Subtopic AGA 2.3 Runways</b>			
ADI (TWR) AGA 2.3.1	Describe runway	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways
ADI (TWR) AGA 2.3.2	Describe instrument runway.	2	ICAO Annex 14
ADI (TWR) AGA 2.3.3	Describe non-instrument runway.	2	ICAO Annex 14
ADI (TWR)	Explain declared distances.	2	TORA, TOSA, ASDA, LDA

AGA 2.3.4			
ADI (TWR) AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strenght of pavements
ADI (TWR) AGA 2.3.6	Describe the daylight makrings on runways.	2	<i>Optional content: Runway Designator Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour</i>
ADI (TWR) AGA 2.3.7	Describe runway lights.	2	<i>Optional content: Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes</i>
ADI (TWR) AGA 2.3.8	Explain the functions of visual landing aids.	2	<i>Optional content: AVASI, VASI, PAPI</i>
ADI (TWR) AGA 2.3.9	Describe the approach lighting system	2	Centre line cross bars, Stroboscopic lights, colours, Intensity and brightness.
ADI (TWR) AGA 2.3.10	Characterise the effect of water/ice on runways.	2	
ADI (TWR) AGA 2.3.11	Explain braking action.	2	Braking action coefficient
ADI (TWR) AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation.	2	
<b>TOPIC AGA 3 OBSTACLES</b>			
<b>Subtopic AGA 3.1 Obstacle-free airspace around aerodromes</b>			
ADI (TWR) AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2	
<b>TOPIC AGA 4 MISCELLANEOUS EQUIPMENT</b>			
<b>Subtopic AGA 4.1 Location</b>			
ADI (TWR) AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	<i>Optional content: LLZ, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI</i>

**Supplements**

## Supplement 1

### SYLLABI STRUCTURE - HOW TO READ THE TABLES

#### 5. Structure of the Rating training syllabi

- c. Each Rating training has been structured as a syllabus, as follows:
- iii. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - iv. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 5 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(2)(ii) Aerodrome Control Instrument Rating for Tower — ADI (TWR))

<b>Subject 4 : METEOROLOGY</b> ← <b>Subject</b>		
<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b> ← <b>Topic</b>		
<b>Sub-topic MET 1.1 - Meteorological phenomena</b> ← <b>Sub -topic</b>		
ACS (RAD) MET 1.1.1	Appreciate the impact of adverse weather.	3 Thunderstorms, Icing, Jetstreams, Clear Air Turbulence (CAT), Turbulence, Microburst, Severe mountain waves, Line squalls <i>Optional content: Volcanic ash, Solar radiation</i>
ACS (RAD) MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4 <i>Optional content: Separation, holding, diversions, re-routings, etc</i>
ACS (RAD) MET 1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4 <i>Optional content: Thunderstorm, Turbulence, icing, Volcanic ash</i>

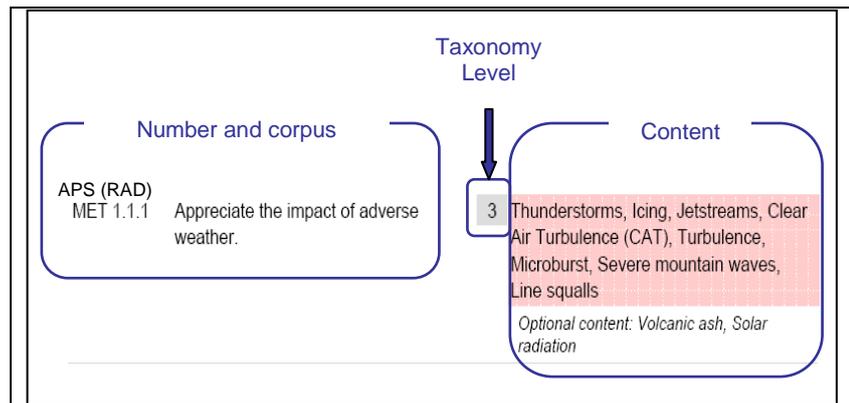
**Figure 1: Layout of syllabus**

- d. The following principles may be applied to the development of a training course that is based on any of the syllabi:
- iv. The structure of the syllabi and the order of the objectives contained within Appendix 5 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - v. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - vi. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter time to be taught than another Subtopic containing two complex objectives.

#### 6. Structure of objectives

- b. An objective consists of three elements:
- iv. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- v. The level, which indicates numerically the taxonomy of the action verb.
- vi. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

## 7. Common Objectives

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

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

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

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

- d. As a general principle, the rating subject Human Factors is identical in each Rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need only be taught once. If a learner is acquiring an additional rating, he/she would not be required to repeat the Human Factors objectives.

8. **Action verbs that support the Taxonomy for training objectives:**

h. The five taxonomy levels should be understood to have the following levels of complexity:

i. Action verbs for Level 1

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

<b>L1 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

j. Action verbs for Level 2

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

<b>L2 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences	Differentiate between different

	between things	types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

## k.Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination).
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
		display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure distance on a map
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to	Scan data display

L3 Verb	Definition	Example
	extract relevant data	
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

## I. Action verbs for Level 4

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

L4 Verb	Definition	Example
<b>Acquire</b>	Gain by oneself and for oneself, obtain after research	Acquire relevant aeronautical information
<b>Adjust</b>	Change to a new position, value or setting	Adjust the surveillance system display
<b>Allocate</b>	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
<b>Analyse</b>	Examine minutely the constitution of	Analyse examples of pilot and controller communication for effectiveness. Analyse the information provided by the radar equipment.
<b>Assign</b>	Allot as a share, make over	Assign codes.
<b>Coordinate</b>	Bring part into proper relation	Coordinate runway in use. Coordinate in the provision of FIS.
<b>Comply</b>	Act in accordance with	Comply with rules
<b>Delegate</b>	Commit authority to somebody	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
<b>Detect</b>	Discover existence of	Detect potential conflict
<b>Ensure</b>	Make safe, make certain	Ensure the agreed course of action is carried out
<b>Expedite</b>	Assist the progress of, do speedily	Expedite traffic
<b>Integrate</b>	Combine into a whole, complete by addition of	Integrate appropriate ATC clearances in control service.

L4 Verb	Definition	Example
	parts	
<b>Manage</b>	Handle, wield, conduct	Manage traffic on the manoeuvring area. Manage traffic in accordance with procedural changes.
<b>Organise</b>	Give orderly structure to, frame and put into working order	Organise pertinent data on data displays. Organise priority of actions.
<b>Predict</b>	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
<b>Provide</b>	Supply, furnish	Provide radar separation. Provide FIS.
<b>Relate</b>	Establish link with	Relate a pressure setting to an altitude

m. Action verbs for Level 5

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

L5 verb	Definition	Example
<b>Assess</b>	Estimate value or difficulty, evaluate, appraise	Assess workload
<b>Balance</b>	Weigh (a question, two arguments, etc., against each other)	Balance the workload with the traffic demand.
<b>Discuss</b>	Investigate by reasoning or argument	Discuss the impact of regulation.
<b>Evaluate</b>	Ascertain amount of, find numerical expression for	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
<b>Interpret</b>	To decide on something's meaning or significance when there is a choice	Interpret operational information.
<b>Resolve</b>	Solve, clear up, settle	Resolve conflict
<b>Select</b>	Pick out as best or most suitable	Select the runway in use
<b>Theorise</b>	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft
<b>Validate</b>	Make valid, ratify, prove valid, show or confirm the validity of something	Validate one radar vectoring option to expedite the traffic

- n. Application of taxonomy levels to practically-based objectives
- v. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.
  - vi. Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radio telephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part task trainer or a simulator.
  - vii. ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.
  - viii. ATM level 5 objectives should be achieved through the use of a simulator.
-

## Supplement 2

### Abbreviations

For the purposes of these AMCs, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Area Control Procedural Rating
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACS	Area Control Surveillance Rating
ADF	Automatic Direction Finding System
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air Filed Flight Plan
AFTN	Aeronautical fixed telecommunication network
AGA	Aerodromes
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management

ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
B-RNAV	Basic Area Navigation
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear Air Turbulence
CBA	Cross Border Area
CBT	Computer Based Training
CCIS	Closed Circuit Information System
CDR	Conditional Route
CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
CPL	Current Flight Plan
D-GPS	Differential Global Positioning System
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EAM	ESARR Advisory Material
EASA	European Aviation Safety Agency
EAT	Expected Approach Time
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Overlay Service
EQPS	Equipment and Systems (subject)

ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan
FUA	Flexible Use of Airspace
GAIN Report	Global Aviation Information Network Report
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GUI	Guidelines
HBK	Handbook
HF	High Frequency
HUM	Human Factors (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union

LAW	Aviation Law (subject)
LDA	Landing Distance Available
LLZ	Localizer
LNAV	Lateral Navigation
LOA	Letter of Agreement
LPV	Lateral Precision with Vertical guidance approach
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
OLDI	On-Line Data Interchange
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PEN	Professional Environment (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring

RCC	Rescue Coordination Centre
RDPS	Radar Data Processing System
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb
RPL	Stored Flight Plan
RTF	Radio Telephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
SVFR	Special Visual Flight Rules Flight
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TODA	Take Off Distance Available
TORA	Take Off Run Available
TRM	Team Resource Management
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDES	Unusual Degraded Emergency Situations
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency

UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84

**ANNEX 1 – PART-ATCO****SUBPART D – ATCO TRAINING****Section 2 – Initial training requirements for Air Traffic Controllers****AMC1 to Appendix 6 –  
Approach Control Procedural Rating (APP)**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. ATCO Rating training Approach Control Procedural Rating (APP) should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 6 – Approach Control Procedural Rating (APP)**.
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTR 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTR 1.1 – Course introduction</b>			
APP INTR 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTR 1.2 – Course administration</b>			
APP INTR 1.2.1	State course administration.	1	
<b>Subtopic INTR 1.3 – Study material and training documentation</b>			
APP INTR 1.3.1	Use appropriate documentation and their sources for course studies.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
APP INTR 1.3.2	Integrate appropriate information into course studies.	4	<i>Optional content: Training documentation, supplementary information, library</i>
<b>TOPIC INTR 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTR 2.1 – Course content and organisation</b>			
APP INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
APP INTR 2.1.2	State the subjects of the course and their purpose.	1	
APP INTR 2.1.3	Describe the organisation of theoretical training.	2	
APP INTR 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTR 2.2 – Training ethos</b>			
APP INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor /instructor feedback
<b>Subtopic INTR 2.3 – Assessment process</b>			
APP INTR 2.3.1	Describe the assessment process.	2	

## Subject 2: AVIATION LAW

<b>TOPIC LAW 1 ATC LICENSING/CERTIFICATE OF COMPETENCE</b>			
<b>Subtopic LAW 1.1 – Privileges and conditions</b>			
APP LAW 1.1.1	Appreciate the conditions which must be met for the issue of Approach Control Procedural rating.	3	Commission Regulation (EU) No 805/2011 <i>Optional content: National documents</i>
APP LAW 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	Commission Regulation (EU) No 805/2011
<b>TOPIC LAW 2 RULES AND REGULATIONS</b>			
<b>Subtopic LAW 2.1 – Reports</b>			
APP LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report <i>Optional content: routine air reports, breach of regulations, watch/log book, records</i>
APP LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	Reporting culture, Air traffic incident report <i>Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2</i>
APP LAW 2.1.3	Use forms for reporting.	3	Air traffic incident reporting form(s) <i>Optional content: ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records</i>
<b>Subtopic LAW 2.2 – Airspace</b>			
APP LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Approach Control Procedural rating operations.	3	
APP LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	<i>Optional content: ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation</i>
APP LAW 2.2.3	Appreciate responsibility for terrain clearance.	3	

### Subject 3: AIR TRAFFIC MANAGEMENT

<b>TOPIC ATM 1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT</b>			
<b>Subtopic ATM 1.1 – Air traffic control (ATC) service</b>			
APP ATM 1.1.1	Provide the appropriate ATC service	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals
APP ATM 1.1.2	Appreciate own areas of responsibility.	3	
<b>Subtopic ATM 1.2 – Flight information service (FIS)</b>			
APP ATM 1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information
APP ATM 1.2.2	Provide FIS.	4	ICAO Doc 4444
<b>Subtopic ATM 1.3 – Alerting service</b>			
APP ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444
APP ATM 1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10, ICAO Doc 4444
<b>Subtopic ATM 1.4 – ATS system capacity and air traffic flow management</b>			
APP ATM 1.4.1	Appreciate principles of ATFM.	3	<i>Optional content: Working principles of ATFM, FABs, FUA, free flight, etc.</i>
APP ATM 1.4.2	Apply flow management procedures.	3	
APP ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	<i>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</i>
APP ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	
APP ATM 1.4.5	Inform supervisor of situation.	3	<i>Optional content: Abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, relevant information (Optional content: reported ground-based incidents, forest fire, smoke, oil pollution), unusual</i>

			<i>meteorological conditions</i>
<b>Subtopic ATM 1.5 – Airspace management (ASM)</b>			
APP ATM 1.5.1	Appreciate the principles and means of ASM..	3	<i>Optional content: FABs, FUA, ICAO Doc 4444, EUROCONTROL ASM HBK – Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs</i>
<b>TOPIC ATM 2 COMMUNICATION</b>			
<b>Subtopic ATM 2.1 – Effective communication</b>			
APP ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 <i>Optional content: ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2</i>
APP ATM 2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback
APP ATM 2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4	
<b>TOPIC ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS</b>			
<b>Subtopic ATM 3.1 – ATC clearances</b>			
APP ATM 3.1.1	Issue appropriate ATC clearances.	3	
APP ATM 3.1.2	Integrate appropriate ATC clearances in control service.	4	
APP ATM 3.1.3	Ensure the agreed course of action is carried out.	4	
<b>Subtopic ATM 3.2 – ATC instructions</b>			
APP ATM 3.2.1	Issue appropriate ATC instructions.	3	
APP ATM 3.2.2	Integrate appropriate ATC clearances in control service.	4	
APP ATM 3.2.3	Ensure the agreed course of action is carried out.	4	
<b>TOPIC ATM 4 COORDINATION</b>			
<b>Subtopic ATM 4.1 – Necessity for coordination</b>			
APP ATM 4.1.1	Identify the need for coordination.	3	
<b>Subtopic ATM 4.2 – Tools and methods for coordination</b>			
APP ATM 4.2.1	Use the available tools for coordination.	3	<i>Optional content: Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech,</i>

			<i>Radiotelephone (RTF), Local agreements, automated system coordination</i>
<b>Subtopic ATM 4.3 – Coordination procedures</b>			
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 <i>Optional content: release point</i>
APP ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>Optional content: Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>
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.
APP ATM 4.3.4	Ensure the agreed course of action is carried out.	4	
APP ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444
APP ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444
<b>TOPIC ATM 5 ALTIMETRY AND LEVEL ALLOCATION</b>			
<b>Subtopic ATM 5.1 – Altimetry</b>			
APP ATM 5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168
APP ATM 5.1.2	Ensure separation according to altimetry data.	4	<i>Optional content: Transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries</i>
<b>Subtopic ATM 5.2 – Terrain clearance</b>			
APP ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance..	4	<i>Optional content: Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude</i>
<b>TOPIC ATM 6 SEPARATIONS</b>			
<b>Subtopic ATM 6.1 – Vertical separation</b>			

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
APP ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 <i>Optional content: Level allocation, During climb/descent, Rate of climb/descent</i>
APP ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030
<b>Subtopic ATM 6.2 – Horizontal separation</b>			
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 ATM 6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030
APP ATM 6.2.3	Provide track separation.	4	
APP ATM 6.2.4	Provide geographical separation.	4	Visual, Using navigation aids, Area Navigation
<b>Subtopic ATM 6.3 – Delegation of separation</b>			
APP ATM 6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4	
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	
APP ATM 6.3.3	Provide contingency separation in the event of a navigation aid failure.	4	Vertical, Standard, Emergency
<b>TOPIC ATM 7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS</b>			
<b>Subtopic ATM 7.1 – Airborne collision avoidance systems</b>			
APP ATM 7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS Optional content: GPWS
<b>TOPIC ATM 8 DATA DISPLAY</b>			
<b>Subtopic ATM 8.1 – Data management</b>			
APP ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	<i>Optional content: Information displayed, strip marking procedures, electronic information data displays, actions based on</i>

			<i>traffic display information, calculation of EETs</i>
APP ATM 8.1.2	Analyse pertinent data on data displays.	4	
APP ATM 8.1.3	Organise pertinent data on data displays.	4	
APP ATM 8.1.4	Process pertinent data on data displays.	3	
APP ATM 8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information <i>Optional content: RPL, AFIL, etc.</i>
APP ATM 8.1.6	Use flight plan information.	3	

### TOPIC ATM 9 OPERATIONAL ENVIRONMENT

#### Subtopic ATM 9.1 – Integrity of the operational environment

APP ATM 9.1.1	Obtain information concerning the operational environment.	3	<i>Optional content: Briefing, notices, local orders, verification of information</i>
APP ATM 9.1.2	Ensure the integrity of the operational environment.	4	<i>Optional content: Integrity of displays, Verification of the information provided by displays, etc.</i>

#### Subtopic ATM 9.2 – Verification of the currency of operational procedures

APP ATM 9.2.1	Check all relevant documentation before managing traffic.	3	<i>Optional content: Briefing, LOAs, NOTAM, AICs</i>
APP ATM 9.2.2	Manage traffic in accordance with procedural changes.	4	

#### Subtopic ATM 9.3 – Handover-takeover

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

### TOPIC ATM 10 PROVISION OF CONTROL SERVICE

#### Subtopic 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
APP ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444
APP ATM 10.1.3	Obtain operational information.	3	ICAO Doc 4444, Local operation manuals
APP ATM 10.1.4	Interpret operational information.	5	
APP ATM 10.1.5	Organise forwarding of operational information.	4	<i>Optional content: including the use of backup procedures</i>

APP ATM 10.1.6	Integrate operational information into control decisions.	4	
APP ATM 10.1.7	Ensure an adequate priority of actions.	4	Formal and situational requirements, workload
APP ATM 10.1.8	Balance the workload with the traffic demand.	5	<i>Optional content: in own sector, in adjacent sectors</i>
APP ATM 10.1.9	Describe the responsibility in regard to unmanned free balloons	2	ICAO Doc 4444
<b>Subtopic ATM 10.2 Approach control</b>			
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
<b>TOPIC ATM 11 HOLDING</b>			
<b>Subtopic ATM 11.1 General holding procedures</b>			
APP ATM 11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times
APP ATM 11.1.2	Appreciate the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.	3	
<b>Subtopic ATM 11.2 Vertical separation in holding</b>			
APP ATM 11.2.1	Provide vertical separation between aircraft in a holding pattern.	4	
APP ATM 10.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft.	4	
<b>Subtopic ATM 11.3 Approaching aircraft</b>			
APP ATM 11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3	
APP ATM 11.3.2	Organise the traffic landing sequence in holding pattern.	4	<i>Optional content: company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management</i>

## Subject 4: METEOROLOGY

<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic MET 1.1 – Meteorological phenomena</b>			
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 <i>Optional content: Volcanic ash</i>
APP MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	<i>Optional content: Separation, holding, diversions, re-routings, etc.</i>
APP MET 1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	<i>Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash</i>
APP MET 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting, level change, etc.
<b>TOPIC MET 2 SOURCES OF METEOROLOGICAL DATA</b>			
<b>Subtopic MET 2.1 – Sources of meteorological information</b>			
APP MET 2.1.1	Obtain meteorological information	3	METAR, TAF, SIGMET, AIRMET <i>Optional content: AIREP/AIREP Special</i>
APP MET 2.1.2	Relay meteorological information	3	To: aircraft, MET office <i>Optional content: flight information centre, adjacent ATS unit</i>

**Subject 5: NAVIGATION**

<b>TOPIC NAV 1 MAPS AND AERONAUTICAL CHARTS</b>			
<b>Subtopic NAV 1.1 – Maps and charts</b>			
APP NAV 1.1.1	Use relevant maps and charts.	3	
<b>TOPIC NAV 2 INSTRUMENTAL NAVIGATION</b>			
<b>Subtopic NAV 2.1 – Navigational systems</b>			
APP NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	<i>Optional content: limitations, status of ground-based and satellite-based systems</i>
APP NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	<i>Optional content: limitations, status, degraded procedures</i>
<b>Subtopic NAV 2.2 – Navigational assistance</b>			
APP NAV 2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	<i>Optional content: Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time</i>
<b>Subtopic NAV 2.3 – Satellite-based systems</b>			
APP NAV 2.3.1	State the different operations associated with satellite-based systems.	1	<i>Optional content: NPA, APV-baro VNAV, APV, LPV, Precision approach, ICAO Doc 8168 Vol.2</i>

## Subject 6: AIRCRAFT

<b>TOPIC ACFT 1 AIRCRAFT INSTRUMENTS</b>			
<b>Subtopic ACFT 1.1 – Aircraft instruments</b>			
APP ACFT 1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	<i>Optional content: TCAS, wind shear indicator, weather radar</i>
APP ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	<i>Optional content: Radios (number of), emergency radios, SELCAL</i>
APP ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability
APP ACFT 1.1.4	Explain the use and benefits of CPDLC.	2	
<b>TOPIC ACFT 2 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFT 2.1 – Wake turbulence categories</b>			
APP ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2	
APP ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3	
<b>Subtopic ACFT 2.2 ICAO approach categories</b>			
APP ACFT 2.2.1	Describe the use of ICAO approach categories	2	ICAO Doc 8168
APP ACFT 2.2.2	Appreciate the effect of ICAO approach categories on the traffic organisation.	3	
<b>TOPIC ACFT 3 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>			
<b>Subtopic ACFT 3.1 – Take-off factors</b>			
APP ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	<i>Optional content: speed, mass, air density, wind and temperature</i>
APP ACFT 3.1.2	Appreciate the influence of factors affecting aircraft on takeoff.	3	<i>Optional content: Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass</i>
<b>Subtopic ACFT 3.2 – Cruise factors</b>			
APP ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation
<b>Subtopic ACFT 3.3 – Descent and initial approach factors</b>			
APP ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	<i>Optional content: wind, speed, rate of descent, aircraft configuration, cabin pressurisation</i>

<b>Subtopic ACFT 3.4 Final approach and landing factors</b>			
APP ACFT 3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	<i>Optional content: Wind, Aircraft configuration, Mass, Meteorological conditions, Runway conditions, Runway slope, Aerodrome elevation</i>
<b>Subtopic ACFT 3.5 Economic factors</b>			
APP ACFT 3.5.1	Integrate consideration of economic factors affecting aircraft.	4	<i>Optional content: Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile</i>
APP ACFT 3.5.2	Use continuous climb techniques where applicable.	3	
APP ACFT 3.5.3	Use direct routing where applicable.	3	
<b>Subtopic ACFT 3.6 Miscellaneous factors</b>			
APP ACFT 3.6.1	Appreciate the influence of operational requirements.	3	<i>Optional content: Military flying, Calibration flights, Aerial photography</i>
<b>Subtopic ACFT 3.7 – Environmental factors</b>			
APP ACFT 3.7.1	Estimate the influence of ecological factors affecting aircraft.	3	<i>Optional content: Fuel dumping, Noise abatement procedures, Minimum flight levels, Bird hazard, Continuous Descent Approach</i>
<b>TOPIC ACFTB 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFT 4.1 – Performance data</b>			
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 ACFT 4.1.2	Identify potential or actual emergency situations.	3	

## Subject 7: HUMAN FACTORS

<b>TOPIC HUM 1 PSYCHOLOGICAL FACTORS</b>			
<b>Subtopic HUM 1.1 – Cognitive</b>			
APP HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response
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
APP HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	<i>Optional content:</i> workload, stress, interpersonal relations, distraction, confidence
<b>TOPIC HUM 2 MEDICAL AND PHYSIOLOGICAL FACTORS</b>			
<b>Subtopic HUM 2.1 – Fatigue</b>			
APP HUM 2.1.1	State factors that cause fatigue.	1	Shift work <i>Optional content:</i> night shifts and rosters
APP HUM 2.1.2	Describe the onset of fatigue.	2	<i>Optional content:</i> Lack of concentration, Listlessness, Irritability, Frustration
APP HUM 2.1.3	Recognise the onset of fatigue in self.	1	
APP HUM 2.1.4	Recognise the onset of fatigue in others.	1	
APP HUM 2.1.5	Consider appropriate action when recognising fatigue.	2	
<b>Subtopic HUM 2.2 – Fitness</b>			
APP HUM 2.2.1	Recognise signs of lack of personal fitness.	1	
APP HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2	
<b>TOPIC HUM 3 SOCIAL AND ORGANISATIONAL FACTORS</b>			
<b>Subtopic HUM 3.1 – Team resource management (TRM)</b>			
APP HUM 3.1.1	State the objectives of TRM.	1	<i>Optional content:</i> TRM course, EUROCONTROL Guidelines for the development of TRM training
APP HUM 3.1.2	State the content of the TRM concept.	1	<i>Optional content:</i> team work, human error, team roles, stress, decision making, communication, situational awareness
<b>Subtopic HUM 3.2 – Teamwork and team roles</b>			

APP HUM 3.2.1	Identify reasons for conflict.	3	
APP HUM 3.2.2	Describe actions to prevent human conflicts.	2	<i>Optional content: TRM team roles</i>
APP HUM 3.2.3	Describe strategies to cope with human conflicts.	2	<i>Optional content: in your team, in the simulator</i>
<b>Subtopic HUM 3.3 – Responsible behaviour</b>			
APP HUM 3.3.1	Consider the factors which influence responsible behaviour.	2	<i>Optional content: situation, team, personal situation and judgement, instance of justification, moral motivation, personality</i>
APP HUM 3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation
<b>TOPIC HUM 4 STRESS</b>			
<b>Subtopic HUM 4.1 – Stress</b>			
APP HUM 4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others
<b>Subtopic HUM 4.2 – Stress management</b>			
APP HUM 4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management
APP HUM 4.2.2	Obtain assistance in stressful situations.	3	<i>Optional content: The benefits of offering, accepting and asking for help in stressful situations</i>
APP HUM 4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM
APP HUM 4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2	
APP HUM 4.2.5	Explain procedures used following an incident/accident.	2	<i>Optional content: CISM, Counselling, Human element</i>
<b>TOPIC HUM 5 HUMAN ERROR</b>			
<b>Subtopic HUM 5.1 – Human error</b>			
APP HUM 5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, proactive versus reactive approach to discovery of error
APP HUM 5.1.2	Differentiate between the types of error.	2	<i>Optional content: Slips, Lapses, Mistakes</i>
APP HUM 5.1.3	Describe error-prone conditions.	2	<i>Optional content: increase in traffic</i>
APP HUM 5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3	
APP HUM 5.1.5	Explain how to detect errors to compensate	2	STCA, MSAW, individual and collective strategy

	for them.		
APP HUM 5.1.6	Execute corrective actions.	3	Error compensation
<b>Subtopic HUM 5.2 – Violation of rules</b>			
APP HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	
<b>TOPIC HUM 6 WORKING METHODS</b>			
<b>Subtopic HUM 6.1 – Efficiency</b>			
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	<i>Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety</i>
<b>TOPIC HUM 7 WORKING KNOWLEDGE</b>			
<b>Subtopic HUM 7.1 – Controller knowledge</b>			
APP HUM 7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	<i>Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET</i>
<b>TOPIC HUM 8 COLLABORATIVE WORK</b>			
<b>Subtopic HUM 8.1 – Communication</b>			
APP HUM 8.1.1	Use communication effectively in ATC.	3	
<b>Subtopic HUM 8.2 – Collaborative work within the same area of responsibility</b>			
APP HUM 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	<i>Optional content: Electronic, written, verbal and non-verbal communication</i>
APP HUM 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	<i>Optional content: Strips legibility and encoding, labels designation, Feedback</i>
APP HUM 8.2.3	List possible actions to provide a safe position handover.	1	<i>Optional content: rigour, preparation, overlap time</i>
APP HUM 8.2.4	Explain consequences of a missed position handover process.	2	
<b>Subtopic HUM 8.3 – Collaborative work between different areas of responsibility</b>			
APP HUM 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	<i>Optional content: Other sectors constraints, electronic coordination tools</i>
<b>Subtopic HUM 8.4 – Controller/pilot cooperation</b>			
APP HUM 8.4.1	Describe parameters affecting controller/pilot cooperation.	2	<i>Optional content: workload, mutual knowledge, controller vs pilot mental picture</i>
<b>TOPIC HUM 9 WORK ENVIRONMENT</b>			

<b>Subtopic HUM 9.1 Ergonomics</b>			
APP HUM 9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3	
<b>TOPIC HUM 10 ATC SAFETY MANAGEMENT</b>			
<b>Subtopic HUM 10.1 Experience feedback</b>			
APP HUM 10.1.1	State the importance of the controllers to the experience feedback process.	1	<i>Optional content: voluntary reporting</i>
APP HUM 10.1.2	Describe how reported occurrences are analysed.	2	<i>Optional content: ESARR 2, local procedures</i>
APP HUM 10.1.3	Name the means used to disseminate recommendations.	1	<i>Optional content: Safety letters, safety boards web pages</i>
APP HUM 10.1.4	Explain the 'Just Culture' concept.	2	Benefits, prerequisites, constraints <i>Optional content: EAM 2 GUI 6, GAINReport</i>
<b>Subtopic HUM 10.2 Safety Investigation Branch</b>			
APP HUM 10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2	
APP HUM 10.2.2	Define working methods of Safety Investigation Branch.	1	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPS 1 VOICE COMMUNICATIONS</b>			
<b>Subtopic EQPS 1.1 Radio communications</b>			
APP EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures  <i>Optional content: Frequency selection, Standby equipment</i>
APP EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	<i>Optional content: Indicator lights, Serviceability displays, Selector/frequency displays</i>
APP EQPS 1.1.3	Consider radio range.	2	<i>Optional content: Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range</i>
<b>Subtopic EQPS 1.2 Other voice communications</b>			
APP EQPS 1.2.1	Operate landline communications.	3	<i>Optional content: telephone, interphone and intercom equipment</i>
<b>TOPIC EQPS 2 AUTOMATION IN ATS</b>			
<b>Subtopic EQPS 2.1 Aeronautical fixed telecommunication network (AFTN)</b>			
APP EQPS 2.1.1	Decode AFTN messages.	3	<i>Optional content: Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>
<b>Subtopic EQPS 2.2 Automatic data interchange</b>			
APP EQPS 2.2.1	Use automatic data transfer equipment where available.	3	<i>Optional content: Sequencing systems, Automated information and coordination, OLDI</i>
<b>TOPIC EQPS 3 CONTROLLER WORKING POSITION</b>			
<b>Subtopic EQPS 3.1 Operation and monitoring of equipment</b>			
APP EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities
APP EQPS 3.1.2	Operate the equipment of the controller working position.	3	<i>Optional content: Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>
APP EQPS 3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3	
<b>Subtopic EQPS 3.2 Situation displays and information systems</b>			

APP EQPS 3.2.1	Use situation displays.	3	
APP EQPS 3.2.2	Check availability of information material.	3	
APP EQPS 3.2.3	Obtain the information from equipment.	3	
<b>Subtopic EQPS 3.3 Flight data systems</b>			
APP EQPS 3.3.1	Use the flight data information at controller working position.	3	
<b>TOPIC EQPS 4 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPS 4.1 New developments</b>			
APP EQPS 4.1.1	Recognise future developments.	1	New advanced systems
<b>TOPIC EQPS 5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION</b>			
<b>Subtopic EQPS 5.1 – Principles of radar</b>			
APP EQPS 5.1.1	Take account of the limitations of equipment and systems.	2	
APP EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities
<b>Subtopic EQPS 5.2 Communication equipment degradation</b>			
APP EQPS 5.2.1	Identify that communication equipment has degraded.	3	<i>Optional content: Ground-air and landline communications</i>
APP EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and landline communications, Alternative methods of transferring data
<b>Subtopic EQPS 5.3 Navigational equipment degradation</b>			
APP EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	<i>Optional content: VOR, Navigational aids</i>
APP EQPS 5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	<i>Optional content: Vertical separation, Information to aircraft, Navigational assistance, Seeking assistance from adjacent units</i>

## Subject 9: PROFESSIONAL ENVIRONMENT

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

## Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

<b>TOPIC UDES 1 UNUSUAL/DEGRADED/EMERGENCY SITUATIONS (UDES)</b>			
<b>Subtopic UDES 1.1 Overview of UDES</b>			
APP UDES 1.1.1	List common unusual/ degraded/ emergency situations.	1	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/ Emergency Situations, ambulance flights, GPWS alerts, airframe failure, runway incursion</i>
APP UDES 1.1.2	Take into account the procedures for given unusual/ degraded/ emergency situations.	2	
APP UDES 1.1.3	Take into account that procedures don't exist for all unusual/ degraded/ emergency situations.	2	<i>Optional content: real life examples</i>
APP UDES 1.1.4	Consider how the evolution of a situation may have an impact on safety.	2	<i>Optional content: Separation, Information, Coordination</i>
<b>TOPIC UDES 2 SKILLS IMPROVEMENT</b>			
<b>Subtopic UDES 2.1 Communication effectiveness</b>			
APP UDES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	Phraseology, Vocabulary, Readback, Silence instruction
APP UDES 2.1.2	Apply change of radiotelephony call sign.	3	ICAO Doc 4444
<b>Subtopic UDES 2.2 Avoidance of mental overload</b>			
APP UDES 2.2.1	Describe actions to keep the control of the situation.	2	<i>Optional content: sector splitting, holding, flow management, task delegation</i>
APP UDES 2.2.2	Organise priority of actions.	4	
APP UDES 2.2.3	Ensure an effective circulation of information.	4	<i>Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR , with ground staff, etc.</i>
APP UDES 2.2.4	Consider asking for help.	2	
<b>Subtopic UDES 2.3 Air/ground cooperation</b>			
APP UDES 2.3.1	Collect appropriate information relevant for the situation.	3	
APP UDES 2.3.2	Assist the pilot.	3	Pilot workload <i>Optional content: Instructions, information, support, human factors, etc.</i>

<b>TOPIC UDES 3 PROCEDURES FOR UNUSUAL/DEGRADED / EMERGENCY SITUATIONS</b>			
<b>Subtopic UDES 3.1 Application of procedures for UDES</b>			
APP UDES 3.1.1	Apply the procedures for given unusual/ degraded/ emergency situations.	3	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations Ambulance flights, GPWS alerts, airframe failure</i>
<b>Subtopic UDES 3.2 Radio failure</b>			
APP UDES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure	2	<b>ICAO Doc 7030</b> <i>Optional content: military procedures</i>
APP UDES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	<i>Optional content: Prolonged loss of communication</i>
<b>Subtopic UDES 3.3 Unlawful interference and aircraft bomb threat</b>			
APP UDES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	<b>ICAO Doc 4444</b>
<b>Subtopic 3.4 Strayed or unidentified aircraft</b>			
APP UDES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	<b>ICAO Doc 4444</b> <i>Optional content: Inside controlled airspace, Outside controlled airspace</i>
APP UDES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.5 Diversions</b>			
APP UDES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	<b>Track/heading, Distance, Other navigational assistance</b> <i>Optional content: Nearest most suitable aerodrome</i>

## Subject 11: AERODROMES

<b>TOPIC AGA 1 AERODROME DATA, LAYOUT AND COORDINATION</b>			
<b>Subtopic AGA 1.1 – Definitions</b>			
APP AGA 1.1.1	Describe the general layout of an aerodrome with a single runway and multiple runways.	2	ICAO Annex 14 <i>Optional content: AIP</i>
APP AGA 1.1.2	Define aerodrome data.	1	CAO Annex 14 <i>Optional content: Aerodrome elevation, Reference point, Apron, Movement area, Manoeuvring area, Hot spot</i>
<b>Subtopic AGA 1.2 – Coordination</b>			
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, ICAO Annex 14
<b>TOPIC AGA 2 MOVEMENT AREA</b>			
<b>Subtopic AGA 2.1 – Movement area</b>			
APP AGA 2.1.1	Describe movement area.	2	ICAO Annex 14
APP AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights
APP AGA 2.1.3	Identify the information on conditions of the movement area that has to be passed to aircraft.	3	Essential information on aerodrome conditions
<b>Subtopic AGA 2.2 – Manoeuvring area</b>			
APP AGA 2.2.1	Describe manoeuvring area.	2	ICAO Annex 14
APP AGA 2.2.2	Describe taxiway.	2	
APP AGA 2.2.3	Describe the daylight marking on taxiways.	2	
APP AGA 2.2.4	Describe taxiway lighting.	2	
<b>Subtopic AGA 2.3 – Runways</b>			
APP AGA 2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways
APP AGA 2.3.2	Describe instrument runway.	2	ICAO Annex 14
APP AGA 2.3.3	Describe non-instrument runway.	2	ICAO Annex 14
APP AGA 2.3.4	Explain declared distances.	2	TORA, TODA, ASDA, LDA
APP AGA 2.3.5	Explain the differences between ACN and	2	Strength of pavements

	PCN.		
APP AGA 2.3.6	Describe the daylight markings on runways.	2	<i>Optional content: Runway Designator, Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour</i>
APP AGA 2.3.7	Describe runway lights.	2	<i>Optional content: Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes</i>
APP AGA 2.3.8	Explain the functions of visual landing aids.	2	<i>Optional content: AVASI, VASI, PAPI</i>
APP AGA 2.3.9	Describe the approach lighting systems.	2	Centre line, cross bars, Stroboscopic lights, Colours, Intensity and brightness
APP AGA 2.3.10	Characterise the effect of water/ ice on runways.	2	
APP AGA 2.3.11	Explain braking action.	2	Braking action coefficient
APP AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation	2	

### TOPIC AGA 3 OBSTACLES

#### Subtopic AGA 3.1 – Obstacle-free airspace around aerodromes

APP AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2	
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### TOPIC AGA 4 MISCELLANEOUS EQUIPMENT

#### Subtopic AGA 4.1 – Location

APP AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	<i>Optional content: LLZ, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI</i>
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**Supplements**

## Supplement 1

### SYLLABI STRUCTURE - HOW TO READ THE TABLES

#### 9. Structure of the Rating training syllabi

- e. Each Rating training has been structured as a syllabus, as follows:
- v. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - vi. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 6 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(2)(iii) Approach Control Procedural Rating — APP)

<b>Subject 4 : METEOROLOGY</b>		<b>Subject</b>
<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>		<b>Topic</b>
<b>Sub-topic MET 1.1 - Meteorological phenomena</b>		<b>Sub -topic</b>
ACS (RAD) MET 1.1.1	Appreciate the impact of adverse weather.	3 Thunderstorms, Icing, Jetstreams, Clear Air Turbulence (CAT), Turbulence, Microburst, Severe mountain waves, Line squalls <i>Optional content: Volcanic ash, Solar radiation</i>
ACS (RAD) MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4 <i>Optional content: Separation, holding, diversions, re-routings, etc</i>
ACS (RAD) MET 1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4 <i>Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash</i>

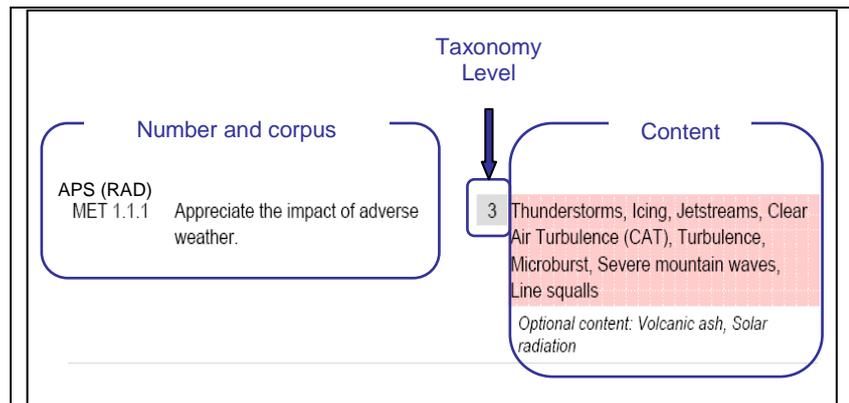
**Figure 1: Layout of syllabus**

- f. The following principles may be applied to the development of a training course that is based on any of the syllabi:
- vii. The structure of the syllabi and the order of the objectives contained within Appendix 6 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - viii. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - ix. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter time to be taught than another Subtopic containing two complex objectives.

#### 10. Structure of objectives

- c. An objective consists of three elements:
- vii. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- viii. The level, which indicates numerically the taxonomy of the action verb.
- ix. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

## 11. Common Objectives

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

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

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

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

- d. As a general principle, the rating subject Human Factors is identical in each Rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need only be taught once. If a learner is acquiring an additional rating, he/she would not be required to repeat the Human Factors objectives.

12. Action verbs that support the Taxonomy for training objectives:

- o. The five taxonomy levels should be understood to have the following levels of complexity:
- p. Action verbs for Level 1

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

L1 Verb	Definition	Example
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

- q. Action verbs for Level 2

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

L2 Verb	Definition	Example
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences	Differentiate between different

	between things	types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

## r. Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination).
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
		display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure distance on a map
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to	Scan data display

L3 Verb	Definition	Example
	extract relevant data	
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

s.Action verbs for Level 4

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

L4 Verb	Definition	Example
<b>Acquire</b>	Gain by oneself and for oneself, obtain after research	Acquire relevant aeronautical information
<b>Adjust</b>	Change to a new position, value or setting	Adjust the surveillance system display
<b>Allocate</b>	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
<b>Analyse</b>	Examine minutely the constitution of	Analyse examples of pilot and controller communication for effectiveness. Analyse the information provided by the radar equipment.
<b>Assign</b>	Allot as a share, make over	Assign codes.
<b>Coordinate</b>	Bring part into proper relation	Coordinate runway in use. Coordinate in the provision of FIS.
<b>Comply</b>	Act in accordance with	Comply with rules
<b>Delegate</b>	Commit authority to somebody	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
<b>Detect</b>	Discover existence of	Detect potential conflict
<b>Ensure</b>	Make safe, make certain	Ensure the agreed course of action is carried out
<b>Expedite</b>	Assist the progress of, do speedily	Expedite traffic
<b>Integrate</b>	Combine into a whole, complete by addition of	Integrate appropriate ATC clearances in control service.

L4 Verb	Definition	Example
	parts	
<b>Manage</b>	Handle, wield, conduct	Manage traffic on the manoeuvring area. Manage traffic in accordance with procedural changes.
<b>Organise</b>	Give orderly structure to, frame and put into working order	Organise pertinent data on data displays. Organise priority of actions.
<b>Predict</b>	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
<b>Provide</b>	Supply, furnish	Provide radar separation. Provide FIS.
<b>Relate</b>	Establish link with	Relate a pressure setting to an altitude

## t. Action verbs for Level 5

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

L5 verb	Definition	Example
<b>Assess</b>	Estimate value or difficulty, evaluate, appraise	Assess workload
<b>Balance</b>	Weigh (a question, two arguments, etc., against each other)	Balance the workload with the traffic demand.
<b>Discuss</b>	Investigate by reasoning or argument	Discuss the impact of regulation.
<b>Evaluate</b>	Ascertain amount of, find numerical expression for	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
<b>Interpret</b>	To decide on something's meaning or significance when there is a choice	Interpret operational information.
<b>Resolve</b>	Solve, clear up, settle	Resolve conflict
<b>Select</b>	Pick out as best or most suitable	Select the runway in use
<b>Theorise</b>	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft
<b>Validate</b>	Make valid, ratify, prove valid, show or confirm the validity of something	Validate one radar vectoring option to expedite the traffic

- u. Application of taxonomy levels to practically-based objectives
    - ix. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.
    - x. Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radio telephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part task trainer or a simulator.
    - xi. ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.
    - xii. ATM level 5 objectives should be achieved through the use of a simulator.
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## Supplement 2

### Abbreviations

For the purposes of these AMCs, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Area Control Procedural Rating
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACS	Area Control Surveillance Rating
ADF	Automatic Direction Finding System
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air Filed Flight Plan
AFTN	Aeronautical fixed telecommunication network
AGA	Aerodromes
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management

ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
B-RNAV	Basic Area Navigation
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear Air Turbulence
CBA	Cross Border Area
CBT	Computer Based Training
CCIS	Closed Circuit Information System
CDR	Conditional Route
CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
CPL	Current Flight Plan
D-GPS	Differential Global Positioning System
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EAM	ESARR Advisory Material
EASA	European Aviation Safety Agency
EAT	Expected Approach Time
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Overlay Service
EQPS	Equipment and Systems (subject)

ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan
FUA	Flexible Use of Airspace
GAIN Report	Global Aviation Information Network Report
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GUI	Guidelines
HBK	Handbook
HF	High Frequency
HUM	Human Factors (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union

LAW	Aviation Law (subject)
LDA	Landing Distance Available
LLZ	Localizer
LNAV	Lateral Navigation
LOA	Letter of Agreement
LPV	Lateral Precision with Vertical guidance approach
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
OLDI	On-Line Data Interchange
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PEN	Professional Environment (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring

RCC	Rescue Coordination Centre
RDPS	Radar Data Processing System
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb
RPL	Stored Flight Plan
RTF	Radio Telephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
SVFR	Special Visual Flight Rules Flight
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TODA	Take Off Distance Available
TORA	Take Off Run Available
TRM	Team Resource Management
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDES	Unusual Degraded Emergency Situations
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency

UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84

**ANNEX 1 – PART-ATCO****SUBPART D – ATCO TRAINING****Section 2 – Initial training requirements for Air Traffic Controllers****AMC1 to Appendix 7 –  
Area Control Procedural Rating (ACP)**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. ATCO Rating training Aerodrome Control Instrument Rating for Tower – ACP should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 7 – Area Control Procedural Rating (ACP)**
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTR 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTR 1.1 – Course introduction</b>			
ACP INTR 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTR 1.2 – Course administration</b>			
ACP INTR 1.2.1	State course administration.	1	
<b>Subtopic INTR 1.3 – Study material and training documentation</b>			
ACP INTR 1.3.1	Use appropriate documentation and their sources for the course studies.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
ACP INTR 1.3.2	Integrate appropriate information into course studies.	4	<i>Optional content: Training documentation, supplementary information, library</i>
<b>TOPIC INTR 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTR 2.1 – Course content and organisation</b>			
ACP INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
ACP INTR 2.1.2	State the subjects of the course and their purpose.	1	
ACP INTR 2.1.3	Describe the organisation of theoretical training.	2	
ACP INTR 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTR 2.2 – Training ethos</b>			
ACP INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor /instructor feedback
<b>Subtopic INTR 2.3 – Assessment process</b>			
ACP INTR 2.3.1	Describe the assessment process.	2	

## Subject 2: AVIATION LAW

<b>TOPIC LAW 1 ATC LICENSING/CERTIFICATE OF COMPETENCE</b>			
<b>Subtopic LAW 1.1 – Privileges and conditions</b>			
ACP LAW 1.1.1	Appreciate the conditions which must be met for the issue of Area Control Procedural rating.	3	Commission Regulation (EU) No 805/2011 <i>Optional content: National documents</i>
ACP LAW 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	Commission Regulation (EU) No 805/2011
<b>TOPIC LAW 2 RULES AND REGULATIONS</b>			
<b>Subtopic LAW 2.1 – Reports</b>			
ACP LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report <i>Optional content: routine air reports, breach of regulations, watch/log book, records</i>
ACP LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	Reporting culture, Air traffic incident report <i>Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2</i>
ACP LAW 2.1.3	Use forms for reporting.	3	Air traffic incident reporting form(s) <i>Optional content: ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records</i>
<b>Subtopic LAWB 2.2 – Airspace</b>			
ACP LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Area Control Procedural rating operations.	3	
ACP LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	<i>Optional content: ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation</i>
ACP LAW 2.2.3	Appreciate responsibility for terrain clearance.	3	

### Subject 3: AIR TRAFFIC MANAGEMENT

<b>TOPIC ATM 1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT</b>			
<b>Subtopic ATM 1.1 – Aerodrome control service</b>			
ACP ATM 1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals
ACP ATM 1.1.2	Appreciate own area of responsibility.	3	
<b>Subtopic ATM 1.2 – Flight information service (FIS)</b>			
ACP ATM 1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information
ACP ATM 1.2.2	Provide FIS.	4	ICAO Doc 4444
<b>Subtopic ATM 1.3 – Alerting service</b>			
ACP ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444
ACP ATM 1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10, ICAO Doc 4444
<b>Subtopic ATM 1.4 – ATS system capacity and air traffic flow management</b>			
ACP ATM 1.4.1	Appreciate principles of ATFCM.	3	<i>Optional content: Working principles of ATFM, FABs, FUA, free flight, etc.</i>
ACP ATM 1.4.2	Apply flow management procedures	3	
ACP ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries	4	<i>Optional content: 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</i>
ACP ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	
ACP ATM 1.4.5	Inform supervisor of situation.	3	<i>Optional content: Abnormal situations, Decrease in sector capacity, Limitations on systems and equipment, Changes in workload /capacity, Relevant information (Optional</i>

			<i>content: reported ground-based incidents, forest fire, smoke, oil pollution), Unusual meteorological conditions</i>
<b>Subtopic ATM 1.5 – Airspace management (ASM)</b>			
ACP ATM 1.5.1	Appreciate the principles and means of ASM	3	<i>Optional content: FABs, FUA, ICAO, Doc 4444, EUROCONTROL ASM HBK – Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs</i>
ACP ATM 1.5.2	Organise traffic to take account of ASM	4	

**TOPIC ATM 2 COMMUNICATION****Subtopic ATM 2.1 – Effective communication**

ACP ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 <i>Optional content: ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2</i>
ACP ATM 2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback
ACP ATM 2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4	

**TOPIC ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS****Subtopic ATM 3.1 – ATC clearances**

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

**Subtopic ATM 3.2 – ATC instructions**

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

**TOPIC ATM 4 COORDINATION**

<b>Subtopic ATM 4.1 – Necessity for coordination</b>			
ACP ATM 4.1.1	Identify the need for coordination.	3	
<b>Subtopic ATM 4.2 – Tools and methods for coordination</b>			
ACP ATM 4.2.1	Use the available tools for coordination.	3	<i>Optional content:</i> <i>Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination</i>
<b>Subtopic ATM 4.3 – Coordination procedures</b>			
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 <i>Optional content: release point</i>
ACP ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>Optional content:</i> <i>Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>
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.
ACP ATM 4.3.4	Ensure the agreed course of action is carried out.	4	
ACP ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444
ACP ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444
<b>TOPIC ATM 5 ALTIMETRY AND LEVEL ALLOCATION</b>			
<b>Subtopic ATM 5.1 – Altimetry</b>			
ACP ATM 5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168
ACP ATM 5.1.2	Ensure separation according to altimetry data.	4	<i>Optional content:</i> <i>Transition level, transition altitude, transition layer, height, flight level,</i>

			<i>altitude, vertical distance to airspace boundaries</i>
<b>Subtopic ATM 5.2 – Terrain Clearance</b>			
ACP ATM 5.2.1	Provide planning, coordination and control sections appropriate to the rules for minimum safe height and terrain clearance	4	<i>Optional content: Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude</i>
<b>TOPIC ATM 6 SEPARATIONS</b>			
<b>Subtopic ATM 6.1 – Vertical separation</b>			
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
ACP ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 <i>Optional content: Level allocation, During climb/descent, Rate of climb/descent</i>
ACP ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030
<b>Subtopic ATM 6.2 – Horizontal separation</b>			
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 <i>Optional content: Based on time with Mach number technique</i>
ACP ATM 6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030
ACP ATM 6.2.3	Provide track separation.	4	
ACP ATM 6.2.4	Provide geographical separation.	4	Visual, Using navigation aids, Area Navigation
<b>Subtopic ATM 6.3 – Delegation of separation</b>			
ACP ATM 6.3.1	Provide contingency separation in the event of a navigational aid failure.	4	Vertical, Standard, Emergency
<b>TOPIC ATM 7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS</b>			
<b>Subtopic ATM 7.1 – Airborne collision avoidance systems</b>			
ACP ATM 7.1.1	Respond to pilot notification of actions based on airborne systems warning	3	ACAS <i>Optional content: GPWS</i>
<b>TOPIC ATM 8 DATA DISPLAY</b>			

<b>Subtopic ATM 8.1 – Data management</b>			
ACP ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	<i>Optional content: Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs</i>
ACP ATM 8.1.2	Analyse pertinent data on data displays.	4	
ACP ATM 8.1.3	Organise pertinent data on data displays.	4	
ACP ATM 8.1.4	Process pertinent data on data displays.	3	
ACP ATM 8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information <i>Optional content: RPL, AFIL, etc.</i>
ACP ATM 8.1.6	Use flight plan information.	3	
<b>TOPIC ATM 9 OPERATIONAL ENVIRONMENT</b>			
<b>Subtopic ATM 9.1 – Integrity of the operational environment</b>			
ACP ATM 9.1.1	Obtain information concerning the operational environment.	3	<i>Optional content: Briefing, notices, local orders, verification of information</i>
ACP ATM 9.1.2	Ensure the integrity of the operational environment.	4	<i>Optional content: integrity of displays, verification of information provided by displays, etc.</i>
<b>Subtopic ATM 9.2 – Verification of the currency of operational procedures</b>			
ACP ATM 9.2.1	Check all relevant documentation before managing traffic.	3	<i>Optional content: Briefing, LOAs, NOTAM, AICs</i>
ACP ATM 9.2.2	Manage traffic in accordance with procedural changes.	4	
<b>Subtopic ATM 9.3 – Handover-takeover</b>			
ACP ATM 9.3.1	Transfer information to the relieving controller.	3	
ACP ATM 9.3.2	Obtain information from the controller handing over.	3	
<b>TOPIC ATM 10 PROVISION OF CONTROL SERVICE</b>			
<b>Subtopic ATM 10.1 – Responsibility and processing of information</b>			
ACP ATM 10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444
ACP ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444
ACP ATM 10.1.3	Obtain operational information	3	ICAO Doc 4444, Local operation manuals

ACP ATM 10.1.4	Interpret operational information.	5	
ACP ATM 10.1.5	Organise forwarding of operational information	4	<i>Optional content: including the use of backup procedures</i>
ACP ATM 10.1.6	Integrate operational information into control decisions.	4	
ACP ATM 10.1.7	Ensure an adequate priority of actions.	4	Formal and situational requirements, workload
ACP ATM 10.1.8	Balance the workload with the traffic demand.	5	<i>Optional content: in own sector, in adjacent sectors</i>
ACP ATM 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444
<b>Subtopic ATM 10.2 – Area control</b>			
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 ATM 10.2.2	Provide planning, coordination and control actions appropriate to the VFR and IFR in VMC and IMC..	4	ICAO Annex2, Annex 11, ICAO Doc 4444
<b>TOPIC ATM 11 HOLDING</b>			
<b>Subtopic ATM 11.1 – General holding procedures</b>			
ACP ATM 11.1.1	Apply holding procedures	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times
ACP ATM 11.1.2	Appreciate the effect of wind, aircraft, speed, rate of turn height aircraft type, aircraft performance.	3	
<b>Subtopic ATM 11.2 – Vertical separation in holding</b>			
ACP ATM 11.2.1	Provide vertical separation between aircraft in a holding pattern.	4	
ACP ATM 11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft	4	
<b>Subtopic ATM 11.3 – Holding aircraft</b>			
ACP ATM 11.3.1	Calculate expected onward clearance times.	3	

## Subject 4: METEOROLOGY

<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic MET 1.1 – Meteorological phenomena</b>			
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 <i>Optional content: Volcanic ash, solar radiation</i>
ACP MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	<i>Optional content: Separation, holding, diversions, re-routings, etc.</i>
ACP MET 1.1.3	Integrate data about metrological phenomena into clearances, instructions and transmitted information.	4	<i>Optional content: Thunderstorm, turbulence, icing, volcanic ash</i>
ACP MET 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting level change, etc.
<b>TOPIC MET 2 SOURCES OF METEOROLOGICAL DATA</b>			
<b>Subtopic MET 2.1 – Sources of meteorological information</b>			
ACP MET 2.1.1	Obtain metrological information	3	METAR, TAF, SIGMET, AIRMET <i>Optional content: AIREP/AIREP special</i>
ACP MET 2.1.2	Relay meteorological information	3	To: aircraft, MET office <i>Optional content: flight information centre, adjacent ATS unit</i>

**Subject 5: NAVIGATION**

<b>TOPIC NAV 1 MAPS AND AERONAUTICAL CHARTS</b>			
<b>Subtopic NAV 1.1 – Maps and charts</b>			
ACP NAV 1.1.1	Use relevant maps and charts.	3	
<b>TOPIC NAV 2 INSTRUMENTAL NAVIGATION</b>			
<b>Subtopic NAV 2.1 – Navigational systems</b>			
ACP NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	<i>Optional content: limitations, status of ground-based and satellite-based system</i>
ACP NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	<i>Optional content: limitations, status, degraded procedures</i>
<b>Subtopic NAV 2.12 – Navigational assistance</b>			
ACP NAV 2.2.1	Evaluate the necessary information to be provided to pilot in need of navigational assistance	5	<i>Optional content: Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time.</i>

## Subject 6: AIRCRAFT

<b>TOPIC ACFT 1 AIRCRAFT INSTRUMENTS</b>			
<b>Subtopic ACFT 1.1 – Aircraft instruments</b>			
ACP ACFT 1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	<i>Optional content: TCAS, wind shear indicator, weather radar</i>
ACP ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	<i>Optional content: Radios (number of), emergency radios, SELCAL</i>
ACP ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability
ACP ACFT 1.1.4	Explain the use and benefits of CPDLC.	2	
<b>TOPIC ACFT 2 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFT 2.1 – Wake turbulence categories</b>			
ACP ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2	
ACP ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3	
<b>TOPIC ACFT 3 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>			
<b>Subtopic ACFT 3.1 – Climb factors</b>			
ACP ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	<i>Optional content: Speed, Mass, air density, wind, temperature</i>
<b>Subtopic ACFT 3.2 – Cruise factors</b>			
ACP ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation.
<b>Subtopic ACFT 3.3 – Descent factors</b>			
ACP ACFT 3.3.1	Integrate consideration of factors affecting the aircraft during descent	4	<i>Optional content: wind, speed, rate of decent, cabin pressurisation.</i>
<b>Subtopic ACFT 3.4 – Economic factors</b>			
ACP ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	<i>Optional content: Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile, Top of descent</i>
ACP ACFT 3.4.2	Use continuous climb techniques where applicable	3	
ACP	Use direct routing where applicable	3	

ACFT 3.4.3			
<b>Subtopic ACFT 3.5 – Miscellaneous factors</b>			
ACP ACFT 3.5.1	Appreciate the influence of operational requirements.	3	<i>Optional content: Military flying, Calibration flights, Aerial photography</i>
<b>TOPIC ACFT 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFT 4.1– Performance data</b>			
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
ACP ACFT 4.1.2	Identify potential or actual emergency situations.	3	

## Subject 7: HUMAN FACTORS

<b>TOPIC HUM 1 PSYCHOLOGICAL FACTORS</b>			
<b>Subtopic HUM 1.1 – Cognitive</b>			
ACP HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response
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
ACP HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	<i>Optional content:</i> workload, stress, interpersonal relations, distraction, confidence
<b>TOPIC HUM 2 MEDICAL AND PHYSIOLOGICAL FACTORS</b>			
<b>Subtopic HUM 2.1 – Fatigue</b>			
ACP HUM 2.1.1	State factors that cause fatigue.	1	Shift work <i>Optional content:</i> night shifts and rosters
ACP HUM 2.1.2	Describe the onset of fatigue.	2	<i>Optional content:</i> Lack of concentration, Listlessness, Irritability, Frustration
ACP HUM 2.1.3	Recognise the onset of fatigue in self.	1	
ACP HUM 2.1.4	Recognise the onset of fatigue in others.	1	
ACP HUM 2.1.5	Consider appropriate action when recognising fatigue.	2	
<b>Subtopic HUM 2.2 – Fitness</b>			
ACP HUM 2.2.1	Recognise signs of lack of personal fitness.	1	
ACP HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2	
<b>TOPIC HUM 3 SOCIAL AND ORGANISATIONAL FACTORS</b>			
<b>Subtopic HUM 3.1 – Team resource management (TRM)</b>			
ACP HUM 3.1.1	State the objectives of TRM.	1	<i>Optional content:</i> TRM course, EUROCONTROL Guidelines for the development of TRM training
ACP HUM 3.1.2	State the content of the TRM concept.	1	<i>Optional content:</i> team work, human error, team roles, stress, decision making, communication, situational awareness

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

ACP HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy
ACP HUM 5.1.6	Execute corrective actions.	3	Error compensation
<b>Subtopic HUM 5.2 – Violation of rules</b>			
ACP HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	
<b>TOPIC HUM 6 WORKING METHODS</b>			
<b>Subtopic HUM 6.1 – Efficiency</b>			
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	<i>Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety</i>
<b>TOPIC HUM 7 WORKING KNOWLEDGE</b>			
<b>Subtopic HUM 7.1 – Controller knowledge</b>			
ACP HUM 7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	<i>Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET</i>
<b>TOPIC HUM 8 COLLABORATIVE WORK</b>			
<b>Subtopic HUM 8.1 – Communication</b>			
ACP HUM 8.1.1	Use communication effectively in ATC.	3	
<b>Subtopic HUM 8.2 – Collaborative work within the same area of responsibility</b>			
ACP HUM 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	<i>Optional content: Electronic, written, verbal and non-verbal communication</i>
ACP HUM 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	<i>Optional content: Strips legibility and encoding, labels designation, Feedback</i>
ACP HUM 8.2.3	List possible actions to provide a safe position handover.	1	<i>Optional content: rigour, preparation, overlap time</i>
ACP HUM 8.2.4	Explain consequences of a missed position handover process.	2	
<b>Subtopic HUM 8.3 – Collaborative work between areas of responsibility</b>			
ACP HUM 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions	1	<i>Optional content: Other sectors constraints, electronic coordination tools</i>
<b>Subtopic HUM 8.4 – Controller/pilot cooperation</b>			
ACP HUM 8.4.1	Describe parameters affecting controller/pilot cooperation	2	<i>Operational content: workload, mutual knowledge, controller vs pilot mental picture</i>
<b>TOPIC HUM 9 WORK ENVIRONMENT</b>			

<b>Subtopic HUM 9.1 – Ergonomics</b>			
ACP HUM 9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3	
<b>TOPIC HUM 10 ACT SAFETY MANAGEMENT</b>			
<b>Subtopic HUM 10.1 – Experience feedback</b>			
ACP HUM 10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	<i>Optional content: voluntary reporting</i>
ACP HUM 10.1.2	Describe how reported occurrences are analysed.	2	<i>Optional content: ESARR 2, local procedures</i>
ACP HUM 10.1.3	Name the means used to disseminate recommendations.	1	<i>Optional content: Safety letters, safety board's web pages.</i>
ACP HUM 10.1.4	Explain the 'Just Culture' concept.	2	<b>Benefits, prerequisites, constraints</b>  <i>Optional content: EAM 2 GUI 6, GAIN report</i>
<b>Subtopic HUM 10.2 – Safety Investigation Branch</b>			
ACP HUM 10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety	2	
ACP HUM 10.2.2	Define working methods of Safety Investigation Branch.	1	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPS 1 VOICE COMMUNICATION</b>			
<b>Subtopic EQPS 1.1 – Radio communications</b>			
ACP EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures  <i>Optional content: Frequency selection, Standby equipment.</i>
ACP EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	<i>Optional content: Indicator lights, Serviceability displays, Selector/frequency displays</i>
ACP EQPS 1.1.3	Consider radio range.	2	<i>Optional content: Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range.</i>
<b>Subtopic EQPS 1.2 – Other voice communications</b>			
ACP EQPS 1.2.1	Operate landline communications.	3	<i>Optional content: telephone interphone and intercom equipment</i>
<b>TOPIC EQPS 2 AUTOMATION IN ATS</b>			
<b>Subtopic EQPS 2.1 – Aeronautical fixed telecommunication network (AFTN)</b>			
ACP EQPS 2.1.1	Decode AFTN messages.	3	<i>Optional content: Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>
<b>Subtopic EQPS 2.2 – Automatic data interchange</b>			
ACP EQPS 2.2.1	Use automatic data transfer equipment where available.	3	<i>Optional content: Sequencing systems, Automated information and coordination, OLDI</i>
<b>TOPIC EQPS 3 CONTROLLER WORKING POSITION</b>			
<b>Subtopic EQPS 3.1 – Operation and monitoring of equipment</b>			
ACP EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities.
ACP EQPS 3.1.2	Operate the equipment of the controller working position.	3	<i>Optional content: situation displays, Flight progress board, Flight data display, Radio Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>
ACP EQPS 3.1.3	Operate all available equipment in unusual/degraded/emergency situations	3	
<b>Subtopic EQPS 3.2 – Situation displays and information systems</b>			
ACP EQPS	Use situation displays.	3	

3.2.1			
ACP EQPS 3.2.2	Check availability of information material	3	
ACP EQPS 3.2.3	Obtain information from equipment	3	
<b>Subtopic EQPS 3.3 – Flight data systems</b>			
ACP EQPS 3.3.1	Use the flight data information at controller working position.	3	
<b>TOPIC EQPS 4 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPS 4.1 – New developments</b>			
ACP EQPS 4.1.1	Recognise future developments.	1	New advanced systems
<b>TOPIC EQPS 5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION</b>			
<b>Subtopic EQPS 5.1 – Reaction to limitations</b>			
ACP EQPS 5.1.1	Take account of the limitations of equipment and systems.	2	
ACP EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities
<b>Subtopic EQPS 5.2 – Communication equipment degradation</b>			
ACP EQPS 5.2.1	Identify that communication equipment has degraded.	3	<i>Optional content: Ground-air, ground-ground and landline communications</i>
ACP EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and landline communications, Alternative methods of transferring data.
<b>Subtopic EQPS 5.3 – Navigational equipment degradation</b>			
ACP EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	Optional content: VOR, Navigational aids.
ACP 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.

**Subject 9: PROFESSIONAL ENVIRONMENT**

<b>TOPIC PEN 1 PROFESSIONAL ENVIRONMENT</b>			
<b>Subtopic PEN 1.1 – Contributors to ATS operations</b>			
ACP PEN 1.1.1	Characterise civil and military ATS activities	2	<i>Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, Air defence Units</i>
ACP PEN 1.1.2	Characterise other parties interfacing with ATS operations	2	<i>Optional content: familiarisation visits to engineering services, fire and emergency services, airline operations offices.</i>
<b>Subtopic PEN 1.2 – Customer relations</b>			
ACP PEN 1.2.1	Identify the role of ATC as a service provider and requirements for ATS users.	3	<i>Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators.</i>
<b>Subtopic PEN 1.3 – Environmental protection</b>			
ACP PEN 1.3.1	Describe processes used to ensure environmental protection.	2	<i>Optional content: night, relations with local community curfews, relations with environmental associations, relevant administrations.</i>

## Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

<b>TOPIC UDES 1 UNUSUAL/DEGRADED/ EMERGENCY SITUATION (UDES)</b>			
<b>Subtopic UDES 1.1 Overview of UDES</b>			
ACP UDES 1.1.1	List common unusual/degraded/emergency situations.	1	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual//Emergency situations, ambulance flights, GPWS alerts, airframe failure, runway incursion</i>
ACP UDES 1.1.2	Take into account the procedures for given unusual/degraded/emergency situations.	2	
ACP UDES 1.1.3	Take into account that procedures don't exist for all unusual/degraded/emergency situations.	2	<i>Optional content: real life examples</i>
ACP UDES 1.1.4	Consider how to evolution of a situation may have an impact on safety.	2	<i>Optional content: Separation, Information, Coordination</i>
<b>TOPIC UDES 2 SKILLS IMPROVEMENT</b>			
<b>Subtopic UDES 2.1 Communication effectiveness</b>			
ACP UDES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	<i>Phraseology, vocabulary, Readback, Silence instruction</i>
ACP UDES 2.1.2	Apply change of radiotelephony call sign.	3	<i>ICAO Doc 4444</i>
<b>Subtopic UDES 2.2 Avoidance of mental overload</b>			
ACP UDES 2.2.1	Describe actions to keep the control of the situation.	2	<i>Optional content: sector splitting, holding, flow management, task delegation</i>
ACP UDES 2.2.2	Organise priority of actions.	4	
ACP UDES 2.2.3	Ensure an effective circulation of information.	4	<i>Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.</i>
ACP UDES 2.2.4	Consider asking for help.	2	
<b>Subtopic UDES 2.3 Air/ground cooperation</b>			
ACP UDES 2.3.1	Collect appropriate information relevant for the situation.	3	
ACP UDES 2.3.2	Assist the pilot.	3	<i>Pilot workload</i> <i>Optional content: Instructions, information, support, human factors, etc.</i>

<b>TOPIC UDES 3 PROCEDURES FOR UNUSUAL/DEGRADED/EMERGENCY SITUATIONS</b>			
<b>Subtopic UDES 3.1 Application of procedures for UDES</b>			
ACP UDES 3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, Ambulance flights, GPWS alerts airframe failure</i>
<b>Subtopic UDES 3.2 Radio failure</b>			
ACP UDES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	<b>ICAO Doc 7030</b> <i>Optional content: military procedures</i>
ACP UDES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	<i>Optional content: Prolonged loss of communication</i>
<b>Subtopic UDES 3.3 Unlawful interference and aircraft bomb threat</b>			
ACP UDES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.4 Strayed or unidentified aircraft</b>			
ACP UDES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	<b>ICAO Doc 4444</b> <i>Optional content: Inside controlled airspace, Outside controlled airspace</i>
ACP UDES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.5 Diversions</b>			
ACP UDES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	<b>Track/heading, Distance, Other navigational assistance</b> <i>Optional content: Nearest most suitable aerodrome</i>

**Supplements**

## Supplement 1

### SYLLABI STRUCTURE - HOW TO READ THE TABLES

#### 13. Structure of the Rating training syllabi

- g. Each Rating training has been structured as a syllabus, as follows:
- vii. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - viii. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 7 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(2)(iv) Area Control Procedural Rating — ACP)

<b>Subject 4 : METEOROLOGY</b>			<b>Subject</b>
<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			<b>Topic</b>
<b>Sub-topic MET 1.1 - Meteorological phenomena</b>			<b>Sub -topic</b>
ACS (RAD) MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Jetstreams, Clear Air Turbulence (CAT), Turbulence, Microburst, Severe mountain waves, Line squalls <i>Optional content: Volcanic ash, Solar radiation</i>
ACS (RAD) MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	<i>Optional content: Separation, holding, diversions, re-routings, etc</i>
ACS (RAD) MET 1.1.3	Integrate data about meteorological phenomena into clearances, instructions and transmitted information.	4	<i>Optional content: Thunderstorm, Turbulence, Icing, Volcanic ash</i>

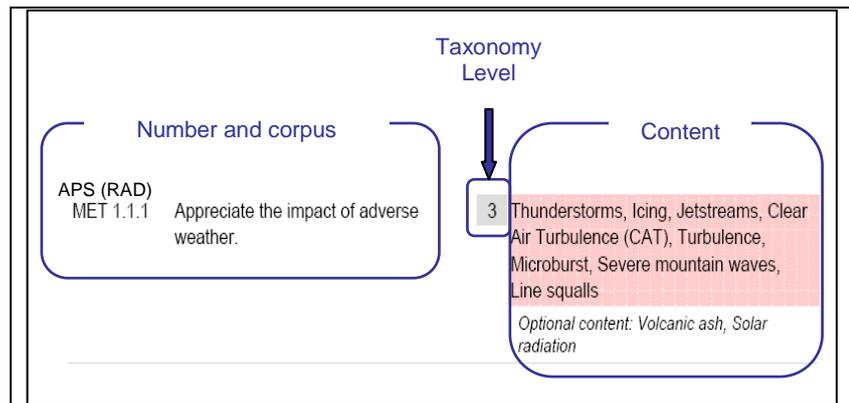
**Figure 1: Layout of syllabus**

- h. The following principles may be applied to the development of a training course that is based on any of the syllabi:
- x. The structure of the syllabi and the order of the objectives contained within Appendix 7 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - xi. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - xii. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter time to be taught than another Subtopic containing two complex objectives.

#### 14. Structure of objectives

- d. An objective consists of three elements:
- x. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- xi. The level, which indicates numerically the taxonomy of the action verb.
- xii. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

## 15. Common Objectives

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

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

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

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

- d. As a general principle, the rating subject Human Factors is identical in each Rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need only be taught once. If a learner is acquiring an additional rating, he/she would not be required to repeat the Human Factors objectives.

16. Action verbs that support the Taxonomy for training objectives:

v. The five taxonomy levels should be understood to have the following levels of complexity:

w. Action verbs for Level 1

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

<b>L1 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

x. Action verbs for Level 2

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

<b>L2 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences	Differentiate between different

	between things	types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

## y.Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination).
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
		display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure distance on a map
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to	Scan data display

L3 Verb	Definition	Example
	extract relevant data	
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

## z. Action verbs for Level 4

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

L4 Verb	Definition	Example
<b>Acquire</b>	Gain by oneself and for oneself, obtain after research	Acquire relevant aeronautical information
<b>Adjust</b>	Change to a new position, value or setting	Adjust the surveillance system display
<b>Allocate</b>	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
<b>Analyse</b>	Examine minutely the constitution of	Analyse examples of pilot and controller communication for effectiveness. Analyse the information provided by the radar equipment.
<b>Assign</b>	Allot as a share, make over	Assign codes.
<b>Coordinate</b>	Bring part into proper relation	Coordinate runway in use. Coordinate in the provision of FIS.
<b>Comply</b>	Act in accordance with	Comply with rules
<b>Delegate</b>	Commit authority to somebody	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
<b>Detect</b>	Discover existence of	Detect potential conflict
<b>Ensure</b>	Make safe, make certain	Ensure the agreed course of action is carried out
<b>Expedite</b>	Assist the progress of, do speedily	Expedite traffic
<b>Integrate</b>	Combine into a whole, complete by addition of	Integrate appropriate ATC clearances in control service.

L4 Verb	Definition	Example
	parts	
<b>Manage</b>	Handle, wield, conduct	Manage traffic on the manoeuvring area. Manage traffic in accordance with procedural changes.
<b>Organise</b>	Give orderly structure to, frame and put into working order	Organise pertinent data on data displays. Organise priority of actions.
<b>Predict</b>	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
<b>Provide</b>	Supply, furnish	Provide radar separation. Provide FIS.
<b>Relate</b>	Establish link with	Relate a pressure setting to an altitude

## aa. Action verbs for Level 5

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

L5 verb	Definition	Example
<b>Assess</b>	Estimate value or difficulty, evaluate, appraise	Assess workload
<b>Balance</b>	Weigh (a question, two arguments, etc., against each other)	Balance the workload with the traffic demand.
<b>Discuss</b>	Investigate by reasoning or argument	Discuss the impact of regulation.
<b>Evaluate</b>	Ascertain amount of, find numerical expression for	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
<b>Interpret</b>	To decide on something's meaning or significance when there is a choice	Interpret operational information.
<b>Resolve</b>	Solve, clear up, settle	Resolve conflict
<b>Select</b>	Pick out as best or most suitable	Select the runway in use
<b>Theorise</b>	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft
<b>Validate</b>	Make valid, ratify, prove valid, show or confirm the validity of something	Validate one radar vectoring option to expedite the traffic

## bb. Application of taxonomy levels to practically-based objectives

- xiii. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.
  - xiv. Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radio telephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part task trainer or a simulator.
  - xv. ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.
  - xvi. ATM level 5 objectives should be achieved through the use of a simulator.
-

## Supplement 2

### Abbreviations

For the purposes of these AMCs, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Area Control Procedural Rating
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACS	Area Control Surveillance Rating
ADF	Automatic Direction Finding System
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air Filed Flight Plan
AFTN	Aeronautical fixed telecommunication network
AGA	Aerodromes
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management

ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
B-RNAV	Basic Area Navigation
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear Air Turbulence
CBA	Cross Border Area
CBT	Computer Based Training
CCIS	Closed Circuit Information System
CDR	Conditional Route
CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
CPL	Current Flight Plan
D-GPS	Differential Global Positioning System
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EAM	ESARR Advisory Material
EASA	European Aviation Safety Agency
EAT	Expected Approach Time
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Overlay Service
EQPS	Equipment and Systems (subject)

ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan
FUA	Flexible Use of Airspace
GAIN Report	Global Aviation Information Network Report
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GUI	Guidelines
HBK	Handbook
HF	High Frequency
HUM	Human Factors (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union

LAW	Aviation Law (subject)
LDA	Landing Distance Available
LLZ	Localizer
LNAV	Lateral Navigation
LOA	Letter of Agreement
LPV	Lateral Precision with Vertical guidance approach
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
OLDI	On-Line Data Interchange
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PEN	Professional Environment (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring

RCC	Rescue Coordination Centre
RDPS	Radar Data Processing System
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb
RPL	Stored Flight Plan
RTF	Radio Telephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
SVFR	Special Visual Flight Rules Flight
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TODA	Take Off Distance Available
TORA	Take Off Run Available
TRM	Team Resource Management
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDES	Unusual Degraded Emergency Situations
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency

UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84

**ANNEX 1 – PART-ATCO****SUBPART D – ATCO TRAINING****Section 2 – Initial training requirements for Air Traffic Controllers****AMC1 to Appendix 8 –  
Approach Control Surveillance Rating (APS)**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. ATCO Rating training Approach Control Surveillance Rating – APS should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 8 – Approach Control Surveillance Rating – APS**
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTR 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTR 1.1 – Course introduction</b>			
APS INTR 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTR 1.2 – Course administration</b>			
APS INTR 1.2.1	State course administration.	1	
<b>Subtopic INTR 1.3 – Study material and training documentation</b>			
APS INTR 1.3.1	Use appropriate documentation and their sources for the course studies.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
APS INTR 1.3.2	Integrate appropriate information into course studies.	4	<i>Optional content: Training documentation, supplementary information, library</i>
<b>TOPIC INTR 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTR 2.1 – Course content and organisation</b>			
APS INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
APS INTR 2.1.2	State the subjects of the course and their purpose.	1	
APS INTR 2.1.3	Describe the organisation of theoretical training.	2	
APS INTR 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTR 2.2 – Training ethos</b>			
APS INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor /instructor feedback
<b>Subtopic INTR 2.3 – Assessment process</b>			
APS INTR 2.3.1	Describe the assessment process.	2	

## Subject 2: AVIATION LAW

<b>TOPIC LAW 1 ATC LICENSING/CERTIFICATE OF COMPETENCE</b>			
<b>Subtopic LAW 1.1 – Privileges and conditions</b>			
APS LAW 1.1.1	Appreciate the conditions which must be met for the issue of Approach Control Surveillance rating.	3	Commission Regulation (EU) No 805/2011 <i>Optional content: National documents</i>
APS LAW 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	Commission Regulation (EU) No 805/2011
<b>TOPIC LAW 2 RULES AND REGULATIONS</b>			
<b>Subtopic LAW 2.1 – Reports</b>			
APS LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report <i>Optional content: routine air reports, breach of regulations, watch/log book, records</i>
APS LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	Reporting culture, Air traffic incident report <i>Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2</i>
APS LAW 2.1.3	Use forms for reporting.	3	Air traffic incident reporting form(s) <i>Optional content: ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records</i>
<b>Subtopic LAW 2.2 – Airspace</b>			
APS LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Approach Control Surveillance rating.	3	
APS LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	<i>Optional content: ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation</i>
APS LAW 2.2.3	Appreciate responsibility for terrain clearance.	3	

### Subject 3: AIR TRAFFIC MANAGEMENT

<b>TOPIC ATM 1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT</b>			
<b>Subtopic ATM 1.1 – Aerodrome control service</b>			
APS ATM 1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals
APS ATM 1.1.2	Appreciate areas of responsibility.	3	
<b>Subtopic ATM 1.2 – Flight information service (FIS)</b>			
APS ATM 1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information
APS ATM 1.2.2	Provide FIS.	4	ICAO Doc 4444
APS ATM 1.2.3	Use ATS surveillance system for the provision of FIS.	3	ICAO Doc 4444, Information to identified aircraft concerning: Traffic, navigation  <i>Optional content: Weather</i>
<b>Subtopic ATM 1.3 – Alerting service</b>			
APS ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444
APS ATM 1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10, ICAO Doc 4444
ATM 1.3.3	Use ATS surveillance system for the provision of ALRS.	3	
<b>Subtopic ATM 1.4 – ATS system capacity and air traffic flow management</b>			
APS ATM 1.4.1	Appreciate principles of ATFM.	3	<i>Optional content: Working principles of ATFM, FABs, FUA, free flight, etc.</i>
APS ATM 1.4.2	Apply flow management procedures.	3	
APS ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	<i>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</i>
APS ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	
APS	Inform supervisor of situation.	3	<i>Optional content:</i>

ATM 1.4.5			<i>Abnormal situations, Decrease in sector capacity, Limitations on systems and equipment, Changes in workload /capacity, Relevant information (Optional content: reported ground-based incidents, forest fire, smoke, oil pollution), Unusual meteorological conditions</i>
APS ATM 1.4.6	Organise traffic flows and patterns to take account of ATS surveillance system capability	4	<i>Optional content: surveillance coverage</i>
<b>Subtopic ATM 1.5 – Airspace management (ASM)</b>			
APS ATM 1.5.1	Appreciate the principles and means of ASM	3	<i>Optional content: FABs, FUA, ICAO, Doc 4444, EUROCONTROL ASM HBK – Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs</i>

## TOPIC ATM 2 COMMUNICATION

### Subtopic ATM 2.1 – Effective communication

APS ATM 2.1.1	Use approved phraseology.	3	<b>ICAO Doc 4444</b> <i>Optional content: ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2</i>
APS ATM 2.1.2	Perform communication effectively.	3	<b>Communication techniques, Readback/verification of readback</b>
APS ATM 2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4	

## TOPIC ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS

### Subtopic ATM 3.1 – ATC clearances

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

<b>Subtopic ATM 3.2 – ATC instructions</b>			
APS ATM 3.2.1	Issue appropriate ATC instructions.	3	
APS ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4	
APS ATM 3.2.3	Ensure the agreed course of action is carried out.	4	
<b>TOPIC ATM 4 COORDINATION</b>			
<b>Subtopic ATM 4.1 – Necessity for coordination</b>			
APS ATM 4.1.1	Identify the need for coordination.	3	
<b>Subtopic ATM 4.2 – Tools and methods for coordination</b>			
APS ATM 4.2.1	Use the available tools for coordination.	3	<i>Optional content: Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination</i>
<b>Subtopic ATM 4.3 – Coordination procedures</b>			
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 <i>Optional content: release point</i>
APS ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>Optional content: Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>
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.
APS ATM 4.3.4	Ensure the agreed course of action is carried out.	4	

APS ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444
APS ATM 4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444

### TOPIC ATM 5 ALTIMETRY AND LEVEL ALLOCATION

#### Subtopic ATM 5.1 – Altimetry

APS ATM 5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168
APS ATM 5.1.2	Ensure separation according to altimetry data.	4	<i>Optional content:</i> <i>Transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries</i>

#### Subtopic ATM 5.2 – Terrain Clearance

APS ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe height and terrain clearance	4	<i>Optional content:</i> <i>Minimum vectoring altitude, Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude</i>
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### TOPIC ATM 6 SEPARATIONS

#### Subtopic 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,
APS ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 <i>Optional content:</i> <i>Level allocation, During climb/descent, Rate of climb/descent</i>
APS ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030
APS ATM 6.1.4	Provide vertical separation in a surveillance environment.	4	Pressure altitude-derived information, pilot level reports <i>Optional content:</i> <i>into/out of ATS surveillance system coverage</i>

#### Subtopic ATM 6.2 – Horizontal separation

APS ATM 6.2.1	Provide Longitudinal separation in a surveillance environment.	4	Speed control, Silent transfer <i>Optional content:</i> <i>within ATS surveillance system coverage</i>
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<b>Subtopic ATM 6.3 – Delegation of separation</b>			
APS ATM 6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4	
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	
<b>Subtopic ATM 6.4 – Wake turbulence distance-based separation</b>			
APS ATM 6.4.1	Provide distance-based wake turbulence separation.	4	
<b>Subtopic ATM 6.5 – Separation based on ATS surveillance systems</b>			
APS ATM 6.5.1	Describe how separation based on ATS surveillance systems is applied.	2	ICAO Doc 4444
APS ATM 6.5.2	Provide horizontal separation.	4	ICAO Doc 4444, ICAO Doc 7030
APS ATM 6.5.3	Provide horizontal separation by practising vectoring in a variety of situations.	4	<i>Optional content: transit, meteorological phenomena, vectoring for approach, departure vs transit vs arrival</i>
<b>TOPIC ATM 7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS</b>			
<b>Subtopic ATM 7.1 – Airborne collision avoidance systems</b>			
APS ATM 7.1.1	Respond to pilot notification of actions based on airborne systems warning.	3	ACAS <i>Optional content: GPWS</i>
<b>Subtopic ATM 7.2 – Ground-based safety nets</b>			
APS ATM 7.2.1	Respond to ground-based safety nets warning.	3	<i>Optional content: STCA, MSAW, APW, APM</i>
<b>TOPIC ATM 8 DATA DISPLAY</b>			
<b>Subtopic ATM 8.1 – Data management</b>			
APS ATM 8.1.1	Update the data display to accurately reflect the traffic situation.	3	<i>Optional content: Information displayed, strip marking procedures, electronic information data displays, actions based on traffic display information, calculation of EETs</i>
APS ATM 8.1.2	Analyse pertinent data on data displays.	4	
APS ATM 8.1.3	Organise pertinent data on data displays.	4	
APS ATM 8.1.4	Process pertinent data on data displays.	3	

APS ATM 8.1.5	Obtain flight plan information.	3	CPL, FPL, Supplementary information <i>Optional content: RPL, AFIL, etc.</i>
APS ATM 8.1.6	Use flight plan information.	3	

### TOPIC ATM 9 OPERATIONAL ENVIRONMENT

#### Subtopic ATM 9.1 – Integrity of the operational environment

APS ATM 9.1.1	Obtain information concerning the operational environment.	3	<i>Optional content: Briefing, notices, local orders, verification of information</i>
APS ATM 9.1.2	Ensure the integrity of the operational environment.	4	<i>Optional content: integrity of displays, verification of information provided by displays, etc.</i>

#### Subtopic ATM 9.2 – Verification of the currency of operational procedures

APS ATM 9.2.1	Check all relevant documentation before managing traffic.	3	<i>Optional content: Briefing, LOAs, NOTAM, AICs</i>
APS ATM 9.2.2	Manage traffic in accordance with procedural changes.	4	

#### Subtopic ATM 9.3 – Handover-takeover

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

### TOPIC ATM 10 PROVISION OF CONTROL SERVICE

#### Subtopic 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
APS ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444
APS ATM 10.1.3	Obtain operational information	3	ICAO Doc 4444, Local operation manuals
APS ATM 10.1.4	Interpret operational information.	5	
APS ATM 10.1.5	Organise forwarding of operational information	4	<i>Optional content: including the use of backup procedures</i>
APS ATM 10.1.6	Integrate operational information into control decisions.	4	
APS ATM 10.1.7	Ensure an adequate priority of actions.	4	Formal and situational requirements, workload

APS ATM 10.1.8	Balance the workload with the traffic demand.	5	<i>Optional content: in own sector, in adjacent sectors</i>
APS ATM 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444
<b>Subtopic ATM 10.2 – ATS surveillance service</b>			
APS ATM 10.2.1	Explain the responsibility for the provision of an ATS surveillance service appropriate to APS rating.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals
APS ATM 10.2.2	Explain the functions that may be performed with the use of ATS surveillance systems derived information presented on a situation display.	2	ICAO Doc 4444
APS ATM 10.2.3	Provide planning, coordination and control actions appropriate to the VFR, SVFR and IFR in VMC and IMC.	4	ICAO Annex 2, Annex 11, ICAO Doc 4444
APS ATM 10.2.4	Apply the procedures for termination of ATS surveillance service.	3	ICAO Doc 4444 <i>Optional content: transfer of control, termination or interruption of ATS surveillance service</i>
<b>Subtopic ATM 10.3 – Vectoring</b>			
APS ATM 10.3.1	Define flight path monitoring and vectoring.	1	ICAO Doc 4444
APS ATM 10.3.2	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444
APS ATM 10.3.3	Provide vectoring.	4	ICAO Doc 4444 <i>Optional content: separation, expediting arrivals, departures and/or climb to cruising levels, navigation assistance, uncontrolled airspace etc.</i>
APS ATM 10.3.4	Apply the procedures for termination of vectoring.	3	ICAO Doc 4444
<b>Subtopic ATM 10.4 – Control service with advanced system support</b>			
APS ATM 10.4.1	Explain the impact of advanced systems on the provision of control service.	2	<i>Optional content: conflict detection</i>
<b>TOPIC ATM 11 HOLDING</b>			
<b>Subtopic ATM 11.1 – General holding procedures</b>			
APS ATM 11.1.1	Apply holding procedures	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times
APS	Appreciate the effect of wind, aircraft,	3	

ATM 11.1.2	speed, rate of turn height aircraft type, aircraft performance.		
<b>Subtopic ATM 11.2 – Vertical separation in holding</b>			
APS ATM 11.2.1	Provide vertical separation between aircraft in a holding pattern.	4	
APS ATM 11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft	4	
<b>Subtopic ATM 11.3 – Approaching aircraft</b>			
APS ATM 11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3	
APS ATM 11.3.2	Organise the traffic landing sequence in a holding pattern.	4	<i>Optional content: company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management.</i>
<b>Subtopic ATM 11.4 – Holding in a surveillance environment</b>			
APS ATM 11.4.1	Provide vectors to aircraft leaving a holding pattern.	4	
APS ATM 11.4.2	Organise traffic to separate other aircraft from holding aircraft.	4	
APS ATM 11.4.3	Ensure identity of aircraft leaving a holding pattern.	4	
APS ATM 11.4.4	Integrate system support, when available.	4	<i>Optional content: arrival management system, automated holding lists, vertical traffic displays.</i>
<b>TOPIC ATM 12 IDENTIFICATION</b>			
<b>Subtopic ATM 12.1 – Establishment of identification</b>			
APS ATM 12.1.1	Explain the methods and procedures of establishing identification.	2	ICAO Doc 4444 <i>Optional content: PSR</i>
APS ATM 12.1.2	Apply the procedures of establishing identification.	3	Any of the ATS Surveillance systems identification methods
APS ATM 12.1.3	Appreciate the precautions when establishing identification.	3	
APS ATM 12.1.4	Apply procedures in the case of misidentification.	3	
<b>Subtopic ATM 12.2 – Maintenance of identification</b>			
APS ATM 12.2.1	Appreciate the necessity to maintain identification.	3	
<b>Subtopic ATM 12.3 – Loss of identity</b>			

APS ATM 12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	<i>Optional content: Out of ATS surveillance system coverage, failure of ATS surveillance system, weather clutter, other clutter, garbling, etc.</i>
APS ATM 12.3.2	Apply methods to re-establish identification.	3	
APS ATM 12.3.3	Respond to loss/doubt concerning identification.	3	<i>Optional content: procedural separation</i>
<b>Subtopic ATM 12.4 – Position Information</b>			
APS ATM 12.4.1	Appreciate the circumstances when position information should be passed to the aircraft.	3	
APS ATM 12.4.2	State the format in which position information can be passed to aircraft.	1	ICAO Doc 4444
<b>Subtopic ATM 12.5 – Transfer of identity</b>			
APS ATM 12.5.1	Apply the methods of transfer of identification.	3	
APS ATM 12.5.2	Appreciate the precautions when transferring identification.	3	

**Subject 4: METEOROLOGY**

<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic MET 1.1 – Meteorological phenomena</b>			
APS MET 1.1.1	Appreciate the impact of adverse weather.	3	Thunderstorms, Icing, Jet streams, Clear Air Turbulence (CAT) Turbulence, Microburst, wind shear, Severe mountain waves, Line squalls <i>Optional content: Volcanic ash</i>
APS MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	<i>Optional content: Separation, holding, diversions, re-routings, etc.</i>
APS MET 1.1.3	Integrate data about metrological phenomena into clearances, instructions and transmitted information.	4	<i>Optional content: Thunderstorm, turbulence, icing, volcanic ash</i>
APS MET 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting level change, etc.
<b>TOPIC MET 2 SOURCES OF METEOROLOGICAL DATA</b>			
<b>Subtopic MET 2.1 – Sources of meteorological information</b>			
APS MET 2.1.1	Obtain metrological information	3	METAR, TAF, SIGMET, AIRMET <i>Optional content: AIREP/AIREP special</i>
APS MET 2.1.2	Relay meteorological information	3	To: aircraft, MET office <i>Optional content: flight information centre, adjacent ATS unit</i>

**Subject 5: NAVIGATION**

<b>TOPIC NAV 1 MAPS AND AERONAUTICAL CHARTS</b>			
<b>Subtopic NAV 1.1 – Maps and charts</b>			
APS NAV 1.1.1	Use relevant maps and charts.	3	
<b>TOPIC NAV 2 INSTRUMENTAL NAVIGATION</b>			
<b>Subtopic NAV 2.1 – Navigational systems</b>			
APS NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	<i>Optional content: limitations, status of ground-based and satellite-based system</i>
APS NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	<i>Optional content: limitations, status, degraded procedures</i>
<b>Subtopic NAV 2.2– Navigational assistance</b>			
APS NAV 2.2.1	Evaluate the necessary information to be provided to pilot in need of navigational assistance	5	<i>Optional content: Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time.</i>
APS NAV 2.2.2	Assist aircraft in navigation when required.	3	Aircraft observed to be deviating from its known intended route, on request
<b>Subtopic NAV 2.3– Satellite-based systems</b>			
APS NAV 2.3.1	State the different operations associated with satellite-based systems.	1	Optional content: NPA, APV-baro VNAV, APV, LAPV, Precision approach, ICOA Doc 8168 Vol. 2

## Subject 6: AIRCRAFT

<b>TOPIC ACFT 1 AIRCRAFT INSTRUMENTS</b>			
<b>Subtopic ACFT 1.1 – Aircraft instruments</b>			
APS ACFT 1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	<i>Optional content: TCAS, wind shear indicator, weather radar</i>
APS ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	<i>Optional content: Radios (number of), emergency radios, SELCAL</i>
APS ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	Transponders: equipment Mode A, Mode C, Mode S, ADS capability
APS ACFT 1.1.4	Explain the use and benefits of CPDLC.	2	
<b>TOPIC ACFT 2 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFT 2.1 – Wake turbulence categories</b>			
APS ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2	
APS ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3	
<b>Subtopic ACFT 2.2 – ICAO approach categories</b>			
APS ACFT 2.2.1	Describe the use of ICAO approach categories	2	ICAO Doc 8168
APS ACFT 2.2.2	Appreciate the effect of ICAO approach categories on traffic organisation	3	
<b>TOPIC ACFT 3 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>			
<b>Subtopic ACFT 3.1 – Climb factors</b>			
APS ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	<i>Optional content: Speed, Mass, air density, wind, temperature</i>
APS ACFT 3.1.2	Integrate the influence of factors affecting aircraft during take-off	3	<i>Optional content: Runway conditions, runway slope, aerodrome elevation, wind, temperature and aircraft mass.</i>
<b>Subtopic ACFT 3.2 – Cruise factors</b>			
APS ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	Level, cruising speed, wind, mass, cabin pressurisation.
<b>Subtopic ACFT 3.3 – Descent and initial approach factors</b>			
APS ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent	4	<i>Optional content: wind, speed, rate of decent, aircraft configuration, cabin pressurisation.</i>

<b>Subtopic ACFT 3.4 – Final approach and landing factors</b>			
APS ACFT 3.4.1	Integrate the influence of factors affecting aircraft during final approach and landing.	4	<i>Optional content: wind, aircraft configuration, Mass, Meteorological conditions, Runway conditions, Runway slope, Aerodrome elevation.</i>
<b>Subtopic ACFT 3.5 – Economic factors</b>			
APS ACFT 3.5.1	Integrate consideration of economic factors affecting aircraft.	4	<i>Optional content: Routing, Level, Speed, Rate of climb and Rate of descent, Approach profile</i>
APS ACFT 3.5.2	Use continuous climb techniques where applicable.	3	
APS ACFT 3.5.3	Use direct routing where applicable.	3	
<b>Subtopic ACFT 3.6 – Miscellaneous factors</b>			
APS ACFT 3.6.1	Appreciate the influence of operational requirements.	3	<i>Optional content: Military flying, Calibration flights, Aerial photography</i>
<b>Subtopic ACFT 3.7 – Environmental factors</b>			
APS ACFT 3.7.1	Estimate the influence of ecological factors affecting aircraft.	3	<i>Optional content: Fuel dumping, noise abatement procedures, minimum flight level, bird hazard, Continuous Descent Approach.</i>
<b>TOPIC ACFTB 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFT 4.1 – Performance data</b>			
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
APS ACFT 4.1.2	Identify potential or actual emergency situations.	3	

## Subject 7: HUMAN FACTORS

<b>TOPIC HUM 1 PSYCHOLOGICAL FACTORS</b>			
<b>Subtopic HUM 1.1 – Cognitive</b>			
APS HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response
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
APS HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	<i>Optional content:</i> workload, stress, interpersonal relations, distraction, confidence
<b>TOPIC HUM 2 MEDICAL AND PHYSIOLOGICAL FACTORS</b>			
<b>Subtopic HUM 2.1 – Fatigue</b>			
APS HUM 2.1.1	State factors that cause fatigue.	1	Shift work <i>Optional content:</i> night shifts and rosters
APS HUM 2.1.2	Describe the onset of fatigue.	2	<i>Optional content:</i> Lack of concentration, Listlessness, Irritability, Frustration
APS HUM 2.1.3	Recognise the onset of fatigue in self.	1	
APS HUM 2.1.4	Recognise the onset of fatigue in others.	1	
APS HUM 2.1.5	Consider appropriate action when recognising fatigue.	2	
<b>Subtopic HUM 2.2 – Fitness</b>			
APS HUM 2.2.1	Recognise signs of lack of personal fitness.	1	
APS HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2	
<b>TOPIC HUM 3 SOCIAL AND ORGANISATIONAL FACTORS</b>			
<b>Subtopic HUM 3.1 – Team resource management (TRM)</b>			
APS HUM 3.1.1	State the objectives of TRM.	1	<i>Optional content:</i> TRM course, EUROCONTROL Guidelines for the development of TRM training
APS HUM 3.1.2	State the content of the TRM concept.	1	<i>Optional content:</i> team work, human error, team roles, stress, decision making, communication, situational awareness

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

APS HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy
APS HUM 5.1.6	Execute corrective actions.	3	Error compensation
<b>Subtopic HUM 5.2 – Violation of rules</b>			
APS HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	
<b>TOPIC HUM 6 WORKING METHODS</b>			
<b>Subtopic HUM 6.1 – Efficiency</b>			
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	<i>Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety</i>
<b>TOPIC HUM 7 WORKING KNOWLEDGE</b>			
<b>Subtopic HUM 7.1 – Controller knowledge</b>			
APS HUM 7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	<i>Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET</i>
<b>TOPIC HUM 8 COLLABORATIVE WORK</b>			
<b>Subtopic HUM 8.1 – Communication</b>			
APS HUM 8.1.1	Use communication effectively in ATC.	3	
<b>Subtopic HUM 8.2 – Collaborative work within the same area of responsibility</b>			
APS HUM 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	<i>Optional content: Electronic, written, verbal and non-verbal communication</i>
APS HUM 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	<i>Optional content: Strips legibility and encoding, labels designation, Feedback</i>
APS HUM 8.2.3	List possible actions to provide a safe position handover.	1	<i>Optional content: rigour, preparation, overlap time</i>
APS HUM 8.2.4	Explain consequences of a missed position handover process.	2	
<b>Subtopic HUM 8.3 – Collaborative work between different areas of responsibility</b>			
APS HUM 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions	1	<i>Optional content: Other sectors constraints, electronic coordination tools</i>
<b>Subtopic HUM 8.4 – Controller/pilot cooperation</b>			
APS HUM 8.4.1	Describe parameters affecting controller/pilot cooperation	2	<i>Operational content: workload, mutual knowledge, controller vs pilot mental picture</i>

<b>TOPIC HUM 9 WORK ENVIRONMENT</b>			
<b>Subtopic HUM 9.1 – Ergonomics</b>			
APS HUM 9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3	
<b>TOPIC HUM 10 ACT SAFETY MANAGEMENT</b>			
<b>Subtopic HUM 10.1 – Experience feedback</b>			
APS HUM 10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	<i>Optional content: voluntary reporting</i>
APS HUM 10.1.2	Describe how reported occurrences are analysed.	2	<i>Optional content: ESARR 2, local procedures</i>
APS HUM 10.1.3	Name the means used to disseminate recommendations.	1	<i>Optional content: Safety letters, safety board's web pages.</i>
APS HUM 10.1.4	Explain the 'Just Culture' concept.	2	<b>Benefits, prerequisites, constraints</b>  <i>Optional content: EAM 2, GUI 6, GAIN report</i>
<b>Subtopic HUM 10.2 – Safety Investigation Branch</b>			
APS HUM 10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety	2	
APS HUM 10.2.2	Define working methods of Safety Investigation Branch.	1	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPS 1 VOICE COMMUNICATION</b>			
<b>Subtopic EQPS 1.1 – Radio communications</b>			
APS EQPS 1.1.1	Operate two-way communication equipment.	3	<b>Transmit/receive switches, Procedures</b>  <i>Optional content: Frequency selection, Standby equipment.</i>
APS EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	<i>Optional content: Indicator lights, Serviceability displays, Selector/frequency displays</i>
APS EQPS 1.1.3	Consider radio range.	2	<i>Optional content: Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range.</i>
<b>Subtopic EQPS 1.2 – Other voice communications</b>			
APS EQPS 1.2.1	Operate landline communications.	3	<i>Optional content: telephone interphone and intercom equipment</i>
<b>TOPIC EQPS 2 AUTOMATION IN ATS</b>			
<b>Subtopic EQPS 2.1 – Aeronautical fixed telecommunication network (AFTN)</b>			
APS EQPS 2.1.1	Decode AFTN messages.	3	<i>Optional content: Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>
<b>Subtopic EQPS 2.2 – Automatic data interchange</b>			
APS EQPS 2.2.1	Use automatic data transfer equipment where available.	3	<i>Optional content: Sequencing systems, Automated information and coordination, OLDI</i>
<b>TOPIC EQPS 3 CONTROLLER WORKING POSITION</b>			
<b>Subtopic EQPS 3.1 – Operation and monitoring of equipment</b>			
APS EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	<b>Notification procedures, Responsibilities.</b>
APS EQPS 3.1.2	Operate the equipment of the controller working position.	3	<i>Optional content: situation displays, Flight progress board, Flight data display, Radio Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>
APS EQPS 3.1.3	Operate all available equipment in unusual/degraded/emergency situations	3	
<b>Subtopic EQPS 3.2 – Situation displays and information systems</b>			
APS EQPS	Use situation displays.	3	

3.2.1			
APS EQPS 3.2.2	Check availability of information material	3	
APS EQPS 3.2.3	Obtain information from equipment	3	
<b>Subtopic EQPS 3.3 – Flight data systems</b>			
APS EQPS 3.3.1	Use the flight data information at controller working position.	3	
<b>Subtopic EQPS 3.4 – Use of ATS surveillance system</b>			
APS EQPS 3.4.1	Use the ATS surveillance system functions	3	
APS EQPS 3.4.2	Analyse the information provided by the ATS surveillance system.	4	
APS EQPS 3.4.3	Assign codes.	4	
APS EQPS 3.4.4	Appreciate the use of advanced surveillance technology.	3	<i>Optional content: Mode S, ADS-B, MLAT</i>
<b>Subtopic EQPS 3.5 – Advanced systems</b>			
APS EQPS 3.5.1	Appreciate the use of controller pilot datalink communications when available.	3	
APS EQPS 3.5.2	Appreciate the use of information provided by advanced systems.	3	<i>Optional content: Trajectory-based information, MTCD, MONA, etc.</i>
<b>TOPIC EQPS 4 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPS 4.1 – New developments</b>			
APS EQPS 4.1.1	Recognise future developments.	1	New advanced systems
<b>TOPIC EQPS 5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION</b>			
<b>Subtopic EQPS 5.1 – Reaction to limitations</b>			
APS EQPS 5.1.1	Take account of the limitations of equipment and systems.	2	
APS EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities
<b>Subtopic EQPS 5.2 – Communication equipment degradation</b>			
APS EQPS 5.2.1	Identify that communication equipment has degraded.	3	<i>Optional content: Ground-air, ground-ground and landline communications</i>
APS EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and landline communications, Alternative methods of transferring data.
<b>Subtopic EQPS 5.3 – Navigational equipment degradation</b>			
APS EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	<i>Optional content: VOR, Navigational aids.</i>

APS EQPS 5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	<i>Optional content: Vertical separation, information to aircraft, navigational assistance, Seeking assistance from adjacent units.</i>
<b>Subtopic EQPS 5.4 – Surveillance equipment degradation</b>			
APS EQPS 5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, loss of certain facilities, Total failure
APS EQPS 5.4.2	Apply contingency procedures in the event of surveillance equipment degradation	3	<i>Optional content: Inform adjacent sectors, inform aircraft, apply vertical separation (emergency), Increased horizontal separation, Reduce the number of aircraft entering area of responsibility, Transfer aircraft to another unit</i>
<b>Subtopic EQPS 5.5 – ATC processing system degradation</b>			
APS EQPS 5.5.1	Identify a processing system degradation	3	<i>Optional content: FDPS, SDPS, Software processing of situation display.</i>
APS EQPS 5.5.2	Apply contingency procedures in the event of a processing system degradation	3	

## Subject 9: PROFESSIONAL ENVIRONMENT

<b>TOPIC PEN 1 PROFESSIONAL ENVIRONMENT</b>			
<b>Subtopic PEN 1.1 – Contributors to ATS operations</b>			
APS PEN 1.1.1	Characterise civil and military ATS activities.	2	<i>Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, Air defence Units</i>
APS PEN 1.1.2	Characterise other parties interfacing with ATS operations.	2	<i>Optional content: familiarisation visits to engineering services, fire and emergency services, airline operations offices.</i>
<b>Subtopic PEN 1.2 – Customer relations</b>			
APS PEN 1.2.1	Identify the role of ATC as a service provider and requirements for ATS users.	3	<i>Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators.</i>
<b>Subtopic PEN 1.3 – Environmental protection</b>			
APS PEN 1.3.1	Describe processes used to ensure environmental protection.	2	<i>Optional content: night curfews, relations with local community, relations with environmental associations, relevant administrations.</i>

## Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

<b>TOPIC UDES 1 UNUSUAL/DEGRADED/ EMERGENCY SITUATION (UDES)</b>			
<b>Subtopic UDES 1.1 – Overview of UDES</b>			
APS UDES 1.1.1	List common unusual/degraded/emergency situations.	1	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual//Emergency situations, ambulance flights, GPWS alerts, airframe failure, runway incursion</i>
APS UDES 1.1.2	Take into account the procedures for given unusual/degraded/emergency situations.	2	
APS UDES 1.1.3	Take into account that procedures don't exist for all unusual/degraded/emergency situations.	2	<i>Optional content: real life examples</i>
APS UDES 1.1.4	Consider how to evolution of a situation may have an impact on safety.	2	<i>Optional content: Separation, Information, Coordination</i>
<b>TOPIC UDES 2 SKILLS IMPROVEMENT</b>			
<b>Subtopic UDES 2.1 – Communication effectiveness</b>			
APS UDES 2.1.1	Ensure effective communication in all circumstances including the case where standard phraseology is not applicable.	4	<i>Phraseology, vocabulary, Readback, Silence instruction</i>
APS UDES 2.1.2	Apply change of radiotelephony call sign.	3	<i>ICAO Doc 4444</i>
<b>Subtopic UDES 2.2 – Avoidance of mental overload</b>			
APS UDES 2.2.1	Describe actions to keep the control of the situation.	2	<i>Optional content: sector splitting, holding, flow management, task delegation</i>
APS UDES 2.2.2	Organise priority of actions.	4	
APS UDES 2.2.3	Ensure an effective circulation of information.	4	<i>Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.</i>
APS UDES 2.2.4	Consider asking for help.	2	
<b>Subtopic UDES 2.3 – Air/ground cooperation</b>			
APS UDES 2.3.1	Collect appropriate information relevant for the situation.	3	
APS UDES 2.3.2	Assist the pilot	3	<i>Pilot workload</i> <i>Optional content: Instructions, information, support, human factors, etc.</i>

<b>TOPIC UDES 3 PROCEDURES FOR UNUSUAL/DEGRADED/EMERGENCY SITUATIONS</b>			
<b>Subtopic UDES 3.1 – Application of procedures for UDES</b>			
APS UDES 3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, Ambulance flights, GPWS alerts airframe failure</i>
<b>Subtopic UDES 3.2 – Radio failure</b>			
APS UDES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	<b>ICAO Doc 7030</b> <i>Optional content: military procedures</i>
APS UDES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	<i>Optional content: Prolonged of communication</i>
<b>Subtopic UDES 3.3 – Unlawful interference and aircraft bomb threat</b>			
APS UDES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.4 – Strayed or unidentified aircraft</b>			
APS UDES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	<b>ICAO Doc 4444</b> <i>Optional content: Inside controlled airspace, Outside controlled airspace</i>
APS UDES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.5 – Diversions</b>			
APS UDES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	<b>Track/heading, Distance, Other navigational assistance</b> <i>Optional content: Nearest most suitable aerodrome</i>
<b>Subtopic UDES 3.6 – Transponder failure</b>			
APS UDES 3.6.1	Apply procedures in the event of an SSR transponder failure	3	<b>ICAO Doc 4441, ICAO Doc 7030</b> <i>Optional content: total/partial failure, impact on ADS-B/Mode S capability</i>

## Subject 11: AERODROMES

### TOPIC AGA 1 AERODROME DATA, LAYOUT AND COORDINATION

#### Subtopic 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 <i>Optional content: AIP</i>
APS AGA 1.1.2	Define aerodrome data.	1	ICAO Annex 14 <i>Optional content: Aerodrome elevation Reference point, Apron, Movement area, Manoeuvring area, Hot Spot</i>

#### Subtopic 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, ICAO Annex 14
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### TOPIC AGA 2 MOVEMENT AREA

#### Subtopic AGA 2.1 – Movement area

APS AGA 2.1.1	Describe movement area.	2	ICAO Annex 14
APS AGA 2.1.2	Describe the marking of obstacles and unusable or unserviceable areas.	2	Flags, Signs on pavement, Lights
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

#### Subtopic AGA 2.2 – Manoeuvring area

APS AGA 2.2.1	Describe Manoeuvring area.	2	ICAO Annex 14
APS AGA 2.2.2	Describe taxiway.	2	
APS AGA 2.2.3	Describe the daylight marking on taxiway.	2	
APS AGA 2.2.4	Describe taxiway lighting.	2	

#### Subtopic AGA 2.3 – Runways

APS AGA 2.3.1	Describe runway.	2	Runway, Runway surface, Runway strip, Shoulder, Runway end safety areas, Clearways, Stopways
APS AGA 2.3.2	Describe instrument runway.	2	ICAO Annex 14
APS AGA 2.3.3	Describe non-instrument runway.	2	ICAO Annex 14
APS AGA 2.3.4	Explain declared distances.	2	TORA, TOSA, ASDA, LDA

APS AGA 2.3.5	Explain the differences between ACN and PCN.	2	Strength of pavements
APS AGA 2.3.6	Describe the daylight markings on runways.	2	<i>Optional content: Runway Designator Centreline, Threshold, Aiming point, Fixed distance, Touchdown zone, Side strip, Colour</i>
APS AGA 2.3.7	Describe runway lights.	2	<i>Optional content: Colour, Centreline, Intensity, Edge, Touchdown zone, Threshold, Barettes</i>
APS AGA 2.3.8	Explain the functions of visual landing aids.	2	<i>Optional content: AVASI, VASI, PAPI</i>
APS AGA 2.3.9	Describe the approach lighting systems.	2	Centre line cross bars, Stroboscopic lights, colours, Intensity and brightness.
APS AGA 2.3.10	Characterise the effect of water/ice on runways.	2	
APS AGA 2.3.11	Explain braking action.	2	Braking action coefficient
APS AGA 2.3.12	Explain the effect of runway visual range on aerodrome operation.	2	

### TOPIC AGA 3 OBSTACLES

#### Subtopic AGA 3.1 – Obstacle-free airspace around aerodromes

APS AGA 3.1.1	Explain the necessity for establishing and maintaining an obstacle-free airspace around aerodromes.	2	
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### TOPIC AGA 4 MISCELLANEOUS EQUIPMENT

#### Subtopic AGA 4.1 – Location

APS AGA 4.1.1	Explain the location of different aerodrome ground equipment.	2	<i>Optional content: LLZ, GP, VDF, radio communication or ATS surveillance systems sensors, stopbars, AVASI, VASI, PAPI</i>
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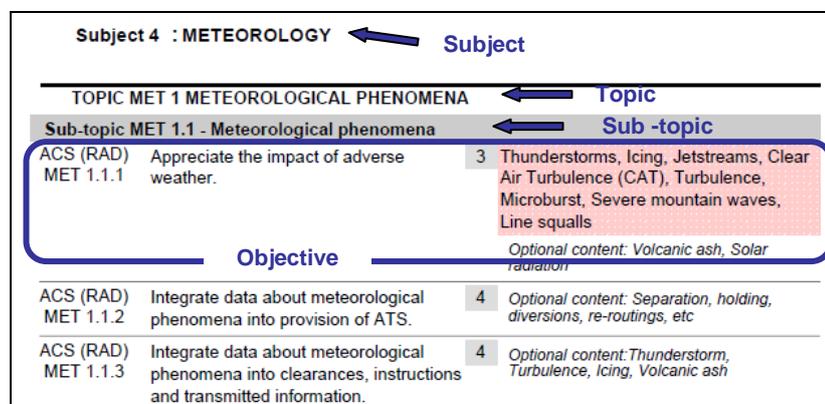
**Supplements**

## Supplement 1

### SYLLABI STRUCTURE - HOW TO READ THE TABLES

#### 17. Structure of the Rating training syllabi

- i. Each Rating training has been structured as a syllabus, as follows:
  - ix. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - x. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 8 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(2)(v) Approach Control Surveillance Rating — APS)



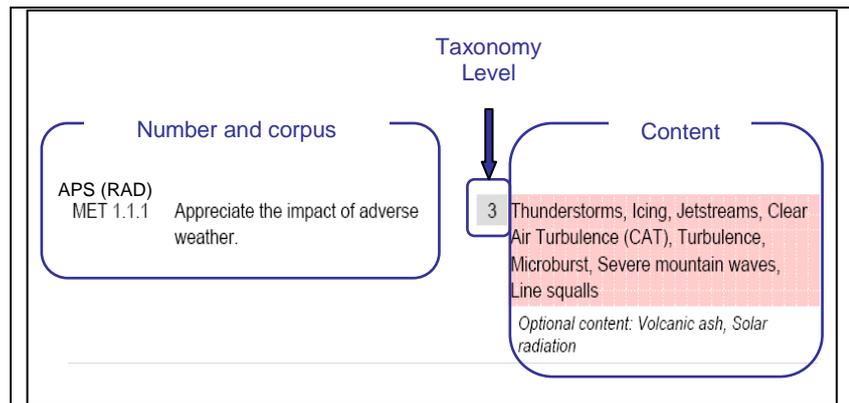
**Figure 1: Layout of syllabus**

- j. The following principles may be applied to the development of a training course that is based on any of the syllabi:
  - xiii. The structure of the syllabi and the order of the objectives contained within Appendix 8 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - xiv. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - xv. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter time to be taught than another Subtopic containing two complex objectives.

#### 18. Structure of objectives

- e. An objective consists of three elements:
  - xiii. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- xiv. The level, which indicates numerically the taxonomy of the action verb.
- xv. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

## 19. Common Objectives

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

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

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

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

- d. As a general principle, the rating subject Human Factors is identical in each Rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need only be taught once. If a learner is acquiring an additional rating, he/she would not be required to repeat the Human Factors objectives.

20. Action verbs that support the Taxonomy for training objectives:

cc. The five taxonomy levels should be understood to have the following levels of complexity:

dd. Action verbs for Level 1

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

L1 Verb	Definition	Example
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

ee. Action verbs for Level 2

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

L2 Verb	Definition	Example
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences	Differentiate between different

	between things	types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

## ff. Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination).
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
		display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure distance on a map
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to	Scan data display

L3 Verb	Definition	Example
	extract relevant data	
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

gg. Action verbs for Level 4

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

L4 Verb	Definition	Example
<b>Acquire</b>	Gain by oneself and for oneself, obtain after research	Acquire relevant aeronautical information
<b>Adjust</b>	Change to a new position, value or setting	Adjust the surveillance system display
<b>Allocate</b>	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
<b>Analyse</b>	Examine minutely the constitution of	Analyse examples of pilot and controller communication for effectiveness. Analyse the information provided by the radar equipment.
<b>Assign</b>	Allot as a share, make over	Assign codes.
<b>Coordinate</b>	Bring part into proper relation	Coordinate runway in use. Coordinate in the provision of FIS.
<b>Comply</b>	Act in accordance with	Comply with rules
<b>Delegate</b>	Commit authority to somebody	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
<b>Detect</b>	Discover existence of	Detect potential conflict
<b>Ensure</b>	Make safe, make certain	Ensure the agreed course of action is carried out
<b>Expedite</b>	Assist the progress of, do speedily	Expedite traffic
<b>Integrate</b>	Combine into a whole, complete by addition of	Integrate appropriate ATC clearances in control service.

L4 Verb	Definition	Example
	parts	
<b>Manage</b>	Handle, wield, conduct	Manage traffic on the manoeuvring area. Manage traffic in accordance with procedural changes.
<b>Organise</b>	Give orderly structure to, frame and put into working order	Organise pertinent data on data displays. Organise priority of actions.
<b>Predict</b>	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
<b>Provide</b>	Supply, furnish	Provide radar separation. Provide FIS.
<b>Relate</b>	Establish link with	Relate a pressure setting to an altitude

## hh. Action verbs for Level 5

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

L5 verb	Definition	Example
<b>Assess</b>	Estimate value or difficulty, evaluate, appraise	Assess workload
<b>Balance</b>	Weigh (a question, two arguments, etc., against each other)	Balance the workload with the traffic demand.
<b>Discuss</b>	Investigate by reasoning or argument	Discuss the impact of regulation.
<b>Evaluate</b>	Ascertain amount of, find numerical expression for	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
<b>Interpret</b>	To decide on something's meaning or significance when there is a choice	Interpret operational information.
<b>Resolve</b>	Solve, clear up, settle	Resolve conflict
<b>Select</b>	Pick out as best or most suitable	Select the runway in use
<b>Theorise</b>	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft
<b>Validate</b>	Make valid, ratify, prove valid, show or confirm the validity of something	Validate one radar vectoring option to expedite the traffic

## ii. Application of taxonomy levels to practically-based objectives

- xvii. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.
  - xviii. Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radio telephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part task trainer or a simulator.
  - xix. ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.
  - xx. ATM level 5 objectives should be achieved through the use of a simulator.
-

## Supplement 2

### Abbreviations

For the purposes of these AMCs, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Area Control Procedural Rating
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACS	Area Control Surveillance Rating
ADF	Automatic Direction Finding System
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air Filed Flight Plan
AFTN	Aeronautical fixed telecommunication network
AGA	Aerodromes
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management

ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
B-RNAV	Basic Area Navigation
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear Air Turbulence
CBA	Cross Border Area
CBT	Computer Based Training
CCIS	Closed Circuit Information System
CDR	Conditional Route
CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
CPL	Current Flight Plan
D-GPS	Differential Global Positioning System
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EAM	ESARR Advisory Material
EASA	European Aviation Safety Agency
EAT	Expected Approach Time
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Overlay Service
EQPS	Equipment and Systems (subject)

ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan
FUA	Flexible Use of Airspace
GAIN Report	Global Aviation Information Network Report
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GUI	Guidelines
HBK	Handbook
HF	High Frequency
HUM	Human Factors (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union

LAW	Aviation Law (subject)
LDA	Landing Distance Available
LLZ	Localizer
LNAV	Lateral Navigation
LOA	Letter of Agreement
LPV	Lateral Precision with Vertical guidance approach
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
OLDI	On-Line Data Interchange
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PEN	Professional Environment (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring

RCC	Rescue Coordination Centre
RDPS	Radar Data Processing System
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb
RPL	Stored Flight Plan
RTF	Radio Telephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
SVFR	Special Visual Flight Rules Flight
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TODA	Take Off Distance Available
TORA	Take Off Run Available
TRM	Team Resource Management
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDES	Unusual Degraded Emergency Situations
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency

UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84

**ANNEX 1 – PART-ATCO****SUBPART D – ATCO TRAINING****Section 2 – Initial training requirements for Air Traffic Controllers****AMC1 to Appendix 9 –  
Area Control Surveillance Rating (ACS)**

- A. General principles that apply to this AMC are contained in the Supplement to AMC1.
- B. ATCO Rating training Area Control Surveillance Rating (ACS) should contain the following training objectives that are associated with the subjects, subject objectives, topics and subtopics contained in **Appendix 9 – Area Control Surveillance Rating (ACS)**.
- C. Subjects, topics and subtopics from the Appendix are repeated in this AMC for the convenience of the reader and do not form part of it.

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## Subject 1: INTRODUCTION TO THE COURSE

<b>TOPIC INTR 1 COURSE MANAGEMENT</b>			
<b>Subtopic INTR 1.1 – Course introduction</b>			
ACS INTR 1.1.1	Explain the aims and main objectives of the course.	2	
<b>Subtopic INTR 1.2 – Course administration</b>			
ACS INTR 1.2.1	State course administration.	1	
<b>Subtopic INTR 1.3 – Study material and training documentation</b>			
ACS INTR 1.3.1	Use appropriate documentation and their sources for the course studies.	3	<i>Optional content: Training documentation, library, CBT library, Web, Learning Management Server</i>
ACS INTR 1.3.2	Integrate appropriate information into course studies.	4	<i>Optional content: Training documentation, supplementary information, library</i>
<b>TOPIC INTR 2 INTRODUCTION TO THE ATC TRAINING COURSE</b>			
<b>Subtopic INTR 2.1 – Course content and organisation</b>			
ACS INTR 2.1.1	State the different training methods applied in the course.	1	Theoretical training, Practical training, Self-study
ACS INTR 2.1.2	State the subjects of the course and their purpose.	1	
ACS INTR 2.1.3	Describe the organisation of theoretical training.	2	
ACS INTR 2.1.4	Describe the organisation of practical training.	2	<i>Optional content: PTP, Simulation, Briefing, Debriefing</i>
<b>Subtopic INTR 2.2 – Training ethos</b>			
ACS INTR 2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor /instructor feedback
<b>Subtopic INTR 2.3 – Assessment process</b>			
ACS INTR 2.3.1	Describe the assessment process.	2	

## Subject 2: AVIATION LAW

<b>TOPIC LAW 1 ATC LICENSING/CERTIFICATE OF COMPETENCE</b>			
<b>Subtopic LAW 1.1 - Privileges and conditions</b>			
ACS LAW 1.1.1	Appreciate the conditions which must be met for the issue of Area Control Surveillance rating.	3	Commission Regulation (EU) No 805/2011 <i>Optional content: National documents</i>
ACS LAW 1.1.2	Explain the conditions for suspension/revocation of ATCO licence.	2	Commission Regulation (EU) No 805/2011
<b>TOPIC LAW 2 RULES AND REGULATIONS</b>			
<b>Subtopic LAW 2.1 – Reports</b>			
ACS LAW 2.1.1	List the standard forms for reports.	1	Air traffic incident report <i>Optional content: routine air reports, breach of regulations, watch/log book, records</i>
ACS LAW 2.1.2	Describe the functions of, and processes for, reporting.	2	Reporting culture, Air traffic incident report <i>Optional content: breach of regulations, watch/log book, records, voluntary reporting, ESARR 2</i>
ACS LAW 2.1.3	Use forms for reporting.	3	Air traffic incident reporting form(s) <i>Optional content: ICAO Doc 4444 Appendix 4, routine air reports, breach of regulations, watch/log book, records</i>
<b>Subtopic LAWB 2.2 – Airspace</b>			
ACS LAW 2.2.1	Appreciate classes and structure of airspace and their relevance to Area Control Surveillance rating operations.	3	
ACS LAW 2.2.2	Provide planning, coordination and control actions appropriate to the airspace classification and structure.	4	<i>Optional content: ICAO Annex 2, ICAO Annex 11, International requirements, Civil requirements, Military requirements, Areas of responsibility, Sectorisation</i>
ACS LAW 2.2.3	Appreciate responsibility for terrain clearance.	3	

### Subject 3: AIR TRAFFIC MANAGEMENT

<b>TOPIC ATM 1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT</b>			
<b>Subtopic ATM 1.1 – Aerodrome control service</b>			
ACS ATM 1.1.1	Provide the appropriate ATC service.	4	ICAO Annex 11, ICAO Doc 7030, ICAO Doc 4444, Operation manuals
ACS ATM 1.1.2	Appreciate own area of responsibility.	3	
<b>Subtopic ATM 1.2 – Flight information service (FIS)</b>			
ACS ATM 1.2.1	Relay appropriate information concerning the location of other conflicting traffic.	3	Traffic information, Essential traffic information
ACS ATM 1.2.2	Provide FIS.	4	ICAO Doc 4444
ACS ATM 1.2.3	Use ATS surveillance system for the provision of FIS.	3	ICAO Doc 4444, Information to identified aircraft concerning: Traffic, navigation  <i>Optional content: Weather</i>
<b>Subtopic ATM 1.3 – Alerting service</b>			
ACS ATM 1.3.1	Provide ALRS.	4	ICAO Doc 4444
ACS ATM 1.3.2	Respond to distress and urgency messages and signals.	3	ICAO Annex 10, ICAO Doc 4444
ATM 1.3.2	Use ATS surveillance system for the provision of ALRS.	3	
<b>Subtopic ATM 1.4 – ATS system capacity and air traffic flow management</b>			
ACS ATM 1.4.1	Appreciate principles of ATFM.	3	<i>Optional content: Working principles of ATFM, FABs, FUA, free flight, etc.</i>
ACS ATM 1.4.2	Apply flow management procedures.	3	
ACS ATM 1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	<i>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</i>
ACS ATM 1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4	
ACS	Inform supervisor of situation.	3	<i>Optional content:</i>

ATM 1.4.5			<i>Abnormal situations, Decrease in sector capacity, Limitations on systems and equipment, Changes in workload /capacity, Relevant information (Optional content: reported ground-based incidents, forest fire, smoke, oil pollution), Unusual meteorological conditions</i>
ACS ATM 1.4.6	Organise traffic flows and patterns to take account of ATS surveillance system capability.	4	<i>Optional content: surveillance coverage</i>
<b>Subtopic ATM 1.5 – Airspace management (ASM)</b>			
ACS ATM 1.5.1	Appreciate the principles and means of ASM	3	<i>Optional content: FABs, FUA, ICAO, Doc 4444, EUROCONTROL ASM HBK – Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs</i>
ACS ATM 1.5.2	Organise traffic to take account of ASM.	4	

**TOPIC ATM 2 COMMUNICATION****Subtopic ATM 2.1 – Effective communication**

ACS ATM 2.1.1	Use approved phraseology.	3	ICAO Doc 4444 <i>Optional content: ICAO Doc 9432 RTF manual, Standard words and phrases as contained in ICAO Annex 10 Vol. 2</i>
ACS ATM 2.1.2	Perform communication effectively.	3	Communication techniques, Readback/verification of readback
ACS ATM 2.1.3	Analyse examples of pilot and controller communication for effectiveness.	4	

**TOPIC ATM 3 ATC CLEARANCES AND ATC INSTRUCTIONS****Subtopic ATM 3.1 – ATC clearances**

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

<b>Subtopic ATM 3.2 – ATC instructions</b>			
ACS ATM 3.2.1	Issue appropriate ATC instructions.	3	
ACS ATM 3.2.2	Integrate appropriate ATC instructions in control service.	4	
ACS ATM 3.2.3	Ensure the agreed course of action is carried out.	4	
<b>TOPIC ATM 4 COORDINATION</b>			
<b>Subtopic ATM 4.1 – Necessity for coordination</b>			
ACS ATM 4.1.1	Identify the need for coordination.	3	
<b>Subtopic ATM 4.2 – Tools and methods for coordination</b>			
ACS ATM 4.2.1	Use the available tools for coordination.	3	<i>Optional content: Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination</i>
<b>Subtopic ATM 4.3 – Coordination procedures</b>			
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 <i>Optional content: release point</i>
ACS ATM 4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>Optional content: Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>
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.
ACS ATM 4.3.4	Ensure the agreed course of action is carried out.	4	
ACS ATM 4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444
ACS	Coordinate in the provision of ALRS.	4	ICAO Doc 4444

ATM 4.3.6			
<b>TOPIC ATM 5 ALTIMETRY AND LEVEL ALLOCATION</b>			
<b>Subtopic ATM 5.1 – Altimetry</b>			
ACS ATM 5.1.1	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168
ACS ATM 5.1.2	Ensure separation according to altimetry data.	4	<i>Optional content: Transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries</i>
<b>Subtopic ATM 5.2 – Terrain Clearance</b>			
ACS ATM 5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe height and terrain clearance	4	<i>Optional content: Minimum vectoring altitude, Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude</i>
<b>TOPIC ATM 6 SEPARATIONS</b>			
<b>Subtopic ATM 6.1 – Vertical separation</b>			
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
ACS ATM 6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 <i>Optional content: Level allocation, During climb/descent, Rate of climb/descent</i>
ACS ATM 6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030
ACS ATM 6.1.4	Provide vertical separation in a surveillance environment	4	Pressure altitude-derived information, pilot level reports <i>Optional content: into/out of ATS surveillance system coverage</i>
<b>Subtopic ATM 6.2 – Horizontal separation</b>			
ACS ATM 6.2.1	Provide Longitudinal separation in a surveillance environment.	4	Speed control, Mach number techniques, Silent transfer <i>Optional content: within ATS surveillance system coverage</i>
<b>Subtopic ATM 6.3 – Wake turbulence distance-based separation</b>			
ACS ATM 6.3.1	Provide distance-based wake turbulence separation.	4	
<b>Subtopic ATM 6.4 – Radar separation</b>			

ACS ATM 6.4.1	Describe how separation based on ATS surveillance systems is applied	2	ICAO Doc 4444
ACS ATM 6.4.2	Provide horizontal separation.	4	ICAO Doc 4444, ICAO Doc 7030
ACS ATM 6.4.3	Provide horizontal separation by practising vectoring in a variety of situations.	4	<i>Optional content: transit, meteorological phenomena, vectoring for approach, departure vs transit vs arrival</i>

### TOPIC ATM 7 AIRBORNE COLLISION AVOIDANCE SYSTEMS AND GROUND-BASED SAFETY NETS

#### Subtopic ATM 7.1 – Airborne collision avoidance systems

ACS ATM 7.1.1	Respond to pilot notification of actions based on airborne systems warning	3	ACAS <i>Optional content: GPWS</i>
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#### Subtopic ATM 7.2 – Ground based safety nets

ACS ATM 7.2.1	Respond to ground-based safety nets warnings.	3	<i>Optional content: STCA, MSAW, APW, APM</i>
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### TOPIC ATM 8 DATA DISPLAY

#### Subtopic ATM 8.1 – Data management

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

### TOPIC ATM 9 OPERATIONAL ENVIRONMENT

#### Subtopic ATM 9.1 – Integrity of the operational environment

ACS ATM 9.1.1	Obtain information concerning the operational environment.	3	<i>Optional content: Briefing, notices, local orders, verification of information</i>
ACS ATM 9.1.2	Ensure the integrity of the operational environment.	4	<i>Optional content: integrity of displays, verification of information provided by displays, etc.</i>

#### Subtopic ATM 9.2 – Verification of the currency of operational procedures

ACS ATM 9.2.1	Check all relevant documentation before managing traffic.	3	<i>Optional content: Briefing, LOAs, NOTAM, AICs</i>
ACS ATM 9.2.2	Manage traffic in accordance with procedural changes.	4	
<b>Subtopic ATM 9.3 – Handover-takeover</b>			
ACS ATM 9.3.1	Transfer information to the relieving controller.	3	
ACS ATM 9.3.2	Obtain information from the controller handing over.	3	
<b>TOPIC ATM 10 PROVISION OF CONTROL SERVICE</b>			
<b>Subtopic ATM 10.1 – Responsibility and processing of information</b>			
ACS ATM 10.1.1	Describe the division of responsibility between air traffic control units.	2	ICAO Doc 4444
ACS ATM 10.1.2	Describe the responsibility in regard to military traffic.	2	ICAO Doc 4444
ACS ATM 10.1.3	Obtain operational information.	3	ICAO Doc 4444, Local operation manuals
ACS ATM 10.1.4	Interpret operational information.	5	
ACS ATM 10.1.5	Organise forwarding of operational information.	4	<i>Optional content: including the use of backup procedures</i>
ACS ATM 10.1.6	Integrate operational information into control decisions.	4	
ACS ATM 10.1.7	Ensure an adequate priority of actions.	4	Formal and situational requirements, workload
ACS ATM 10.1.8	Balance the workload with the traffic demand.	5	<i>Optional content: in own sector, in adjacent sectors</i>
ACS ATM 10.1.9	Describe the responsibility in regard to unmanned free balloons.	2	ICAO Doc 4444
<b>Subtopic ATM 10.2 – ATS surveillance service</b>			
ACS ATM 10.2.1	Explain the responsibility for the provision of ATS surveillance service appropriate to ACS rating.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals
ACS ATM 10.2.2	Explain the functions that may be performed with the use of ATS surveillance systems derived information presented on a situation display..	2	ICAO Doc 4444
ACS ATM 10.2.3	Provide planning, coordination and control actions appropriate to the VFR, and IFR in VMC and IMC.	4	ICAO Annex 2, Annex 11, ICAO Doc 4444
ACS ATM 10.2.4	Apply the procedures for termination of ATS surveillance service	3	ICAO Doc 4444 <i>Optional content: transfer of control, termination or interruption of ATS surveillance service</i>

<b>Subtopic ATM 10.3 – Vectoring</b>			
ACS ATM 10.3.1	Define flight path monitoring and vectoring	1	ICAO Doc 4444
ACS ATM 10.3.2	Explain the requirements for vectoring and termination of vectoring.	2	ICAO Doc 4444
ACS ATM 10.3.3	Provide Vectoring	4	ICAO Doc 4444 <i>Optional content: separation, expediting arrivals, departures and/or climb to cruising levels, navigation assistance, uncontrolled airspace etc.</i>
ACS ATM 10.3.4	Apply the procedures for termination of vectoring.	3	ICAO Doc 4444
<b>Subtopic ATM 10.4 – Control service with advanced system support</b>			
ACS ATM 10.4.1	Explain the impact of advanced systems on the provision of control service.	2	<i>Optional content: conflict detection</i>
<b>TOPIC ATM 11 HOLDING</b>			
<b>Subtopic ATM 11.1 – General holding procedures</b>			
ACS ATM 11.1.1	Apply holding procedures	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times
ACS ATM 11.1.2	Appreciate the effect of wind, aircraft, speed, rate of turn height aircraft type, aircraft performance.	3	
<b>Subtopic ATM 11.2 – Vertical separation in holding</b>			
ACS ATM 11.2.1	Provide vertical separation between aircraft in a holding pattern.	4	
ACS ATM 11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft	4	
<b>Subtopic ATM 11.3 – Holding aircraft</b>			
ACS ATM 11.3.1	Calculate expected onward clearance times.	3	
<b>Subtopic ATM 11.4 – Holding in a surveillance environment</b>			
ACS ATM 11.4.1	Provide vectors to aircraft leaving a holding pattern.	4	
ACS ATM 11.4.2	Organise traffic to separate other aircraft from holding aircraft.	4	
ACS ATM 11.4.3	Ensure identity of aircraft leaving a holding pattern.	4	
ACS ATM 11.4.4	Integrate system support, when available.	4	<i>Optional content: arrival management system, automated holding lists, vertical traffic displays.</i>
<b>TOPIC ATM 12 IDENTIFICATION</b>			

<b>Subtopic ATM 12.1 – Establishment of identification</b>			
ACS ATM 12.1.1	Explain the methods and procedures of establishing identification.	2	ICAO Doc 4444, SSR <i>Optional content: PSR</i>
ACS ATM 12.1.2	Apply the procedures of establishing identification.	3	Any of the ATS Surveillance systems identification methods.
ACS ATM 12.1.3	Appreciate the precautions when establishing identification.	3	
ACS ATM 12.1.4	Apply procedures in the case of misidentification.	3	
<b>Subtopic ATM 12.2 – Maintenance of identification</b>			
ACS ATM 12.2.1	Appreciate the necessity to maintain identification.	3	
<b>Subtopic ATM 12.3 – Loss of identity</b>			
ACS ATM 12.3.1	Appreciate when an aircraft identification is lost or in doubt.	3	<i>Optional content: Out of ATS surveillance system coverage, failure of ATS surveillance system, weather clutter, other clutter, garbling, etc.</i>
ACS ATM 12.3.2	Apply methods to re-establish identification.	3	
ACS ATM 12.3.3	Respond to loss/doubt concerning identification.	3	<i>Optional content: procedural separation</i>
<b>Subtopic ATM 12.4 – Position Information</b>			
ACS ATM 12.4.1	Appreciate the circumstances when position information should be passed to the aircraft.	3	
ACS ATM 12.4.2	State the format in which position information can be passed to aircraft.	1	ICAO Doc 4444
<b>Subtopic ATM 12.5 – Transfer of identity</b>			
ACS ATM 12.5.1	Apply the methods of transfer of identification.	3	
ACS ATM 12.5.2	Appreciate the precautions when transferring identification.	3	

## Subject 4: METEOROLOGY

<b>TOPIC MET 1 METEOROLOGICAL PHENOMENA</b>			
<b>Subtopic MET 1.1 – Meteorological phenomena</b>			
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 <i>Optional content: Volcanic ash, solar radiation</i>
ACS MET 1.1.2	Integrate data about meteorological phenomena into provision of ATS.	4	<i>Optional content: Separation, holding, diversions, re-routings, etc.</i>
ACS MET 1.1.3	Integrate data about metrological phenomena into clearances, instructions and transmitted information.	4	<i>Optional content: Thunderstorm, turbulence, icing, volcanic ash</i>
ACS MET 1.1.4	Use techniques to avoid adverse weather when necessary/possible.	3	Rerouting level change, etc.
<b>TOPIC MET 2 SOURCES OF METEOROLOGICAL DATA</b>			
<b>Subtopic MET 2.1 – Sources of meteorological information</b>			
ACS MET 2.1.1	Obtain metrological information.	3	METAR, TAF, SIGMET, AIRMET <i>Optional content: AIREP/AIREP special</i>
ACS MET 2.1.2	Relay meteorological information.	3	To: aircraft, MET office <i>Optional content: flight information centre, adjacent ATS unit</i>

**Subject 5: NAVIGATION**

<b>TOPIC NAV 1 MAPS AND AERONAUTICAL CHARTS</b>			
<b>Subtopic NAV 1.1 – Maps and charts</b>			
ACS NAV 1.1.1	Use relevant maps and charts.	3	
<b>TOPIC NAV 2 INSTRUMENTAL NAVIGATION</b>			
<b>Subtopic NAV 2.1 – Navigational systems</b>			
ACS NAV 2.1.1	Manage traffic in case of change in the operational status of navigational systems.	4	<i>Optional content: limitations, status of ground-based and satellite-based system</i>
ACS NAV 2.1.2	Appreciate the effect of precision, limitations and change of the operational status of navigational systems.	3	<i>Optional content: limitations, status, degraded procedures</i>
<b>Subtopic NAV 2.2 – Navigational assistance</b>			
ACS NAV 2.2.1	Evaluate the necessary information to be provided to pilot in need of navigational assistance.	5	<i>Optional content: Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time.</i>
ACS NAV 2.2.2	Assist aircraft in navigation when required.	3	Aircraft observed to be deviating from its known intended route, on request

## Subject 6: AIRCRAFT

<b>TOPIC ACFT 1 AIRCRAFT INSTRUMENTS</b>			
<b>Subtopic ACFT 1.1 – Aircraft instruments</b>			
ACS ACFT 1.1.1	Integrate the indication from aircraft instruments provided by the pilot in the provision of ATS.	4	<i>Optional content: TCAS, wind shear indicator, weather radar</i>
ACS ACFT 1.1.2	Explain the operation of aircraft radio equipment.	2	<i>Optional content: Radios (number of), emergency radios, SELCAL</i>
ACS ACFT 1.1.3	Explain the operation of on-board surveillance equipment.	2	<b>Transponders: equipment Mode A, Mode C, Mode S, ADS capability</b>
ACS ACFT 1.1.4	Explain the use and benefits of CPDLC.	2	
<b>TOPIC ACFT 2 AIRCRAFT CATEGORIES</b>			
<b>Subtopic ACFT 2.1 – Wake turbulence categories</b>			
ACS ACFT 2.1.1	Explain the wake turbulence effect and associated hazards to the succeeding aircraft.	2	
ACS ACFT 2.1.2	Appreciate the techniques used to prevent hazards associated with wake turbulence on succeeding aircraft.	3	
<b>TOPIC ACFT 3 FACTORS AFFECTING AIRCRAFT PERFORMANCE</b>			
<b>Subtopic ACFT 3.1 – Climb factors</b>			
ACS ACFT 3.1.1	Integrate the influence of factors affecting aircraft during climb.	4	<i>Optional content: Speed, Mass, air density, wind, temperature</i>
<b>Subtopic ACFT 3.2 – Cruise factors</b>			
ACS ACFT 3.2.1	Integrate the influence of factors affecting aircraft during cruise.	4	<b>Level, cruising speed, wind, mass, cabin pressurisation.</b>
<b>Subtopic ACFT 3.3 – Descent factors</b>			
ACS ACFT 3.3.1	Integrate the influence of factors affecting aircraft during descent.	4	<i>Optional content: wind, speed, rate of decent, cabin pressurisation.</i>
<b>Subtopic ACFT 3.4 – Economic factors</b>			
ACS ACFT 3.4.1	Integrate consideration of economic factors affecting aircraft.	4	<i>Optional content: Routing, Level, Speed, Rate of Climb and Rate of descent, Approach profile, Top of descent</i>
ACS ACFT 3.4.2	Use continuous climb techniques where applicable.	3	
ACS ACFT 3.4.3	Use direct routing where applicable.	3	

<b>Subtopic ACFT 3.5 – Miscellaneous factors</b>			
ACS ACFT 3.5.1	Appreciate the influence of operational requirements.	3	<i>Optional content: Military flying, Calibration flights, Aerial photography</i>
<b>TOPIC ACFTB 4 AIRCRAFT DATA</b>			
<b>Subtopic ACFT 4.1 – Performance data</b>			
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
ACS ACFT 4.1.2	Identify potential or actual emergency situations.	3	

## Subject 7: HUMAN FACTORS

<b>TOPIC HUM 1 PSYCHOLOGICAL FACTORS</b>			
<b>Subtopic HUM 1.1 – Cognitive</b>			
ACS HUM 1.1.1	Describe the human information processing model.	2	Attention, perception, memory, situational awareness, decision making, response
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
ACS HUM 1.1.3	Monitor the effect of human information processing factors on decision making.	3	<i>Optional content:</i> workload, stress, interpersonal relations, distraction, confidence
<b>TOPIC HUM 2 MEDICAL AND PHYSIOLOGICAL FACTORS</b>			
<b>Subtopic HUM 2.1 – Fatigue</b>			
ACS HUM 2.1.1	State factors that cause fatigue.	1	Shift work <i>Optional content:</i> night shifts and rosters
ACS HUM 2.1.2	Describe the onset of fatigue.	2	<i>Optional content:</i> Lack of concentration, Listlessness, Irritability, Frustration
ACS HUM 2.1.3	Recognise the onset of fatigue in self.	1	
ACS HUM 2.1.4	Recognise the onset of fatigue in others.	1	
ACS HUM 2.1.5	Consider appropriate action when recognising fatigue.	2	
<b>Subtopic HUM 2.2 – Fitness</b>			
ACS HUM 2.2.1	Recognise signs of lack of personal fitness.	1	
ACS HUM 2.2.2	Describe actions when aware of a lack of personal fitness.	2	
<b>TOPIC HUM 3 SOCIAL AND ORGANISATIONAL FACTORS</b>			
<b>Subtopic HUM 3.1 – Team resource management (TRM)</b>			
ACS HUM 3.1.1	State the objectives of TRM.	1	<i>Optional content:</i> TRM course, EUROCONTROL Guidelines for the development of TRM training
ACS HUM 3.1.2	State the content of the TRM concept.	1	<i>Optional content:</i> team work, human error, team roles, stress, decision making, communication, situational awareness

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

ACS HUM 5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy
ACS HUM 5.1.6	Execute corrective actions.	3	Error compensation
<b>Subtopic HUM 5.2 – Violation of rules</b>			
ACS HUM 5.2.1	Explain the causes and dangers of violation of rules becoming accepted as a practice.	2	
<b>TOPIC HUM 6 WORKING METHODS</b>			
<b>Subtopic HUM 6.1 – Efficiency</b>			
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	<i>Optional content: Own and others workload, OJT, customer requirements, economy, ecology, safety</i>
<b>TOPIC HUM 7 WORKING KNOWLEDGE</b>			
<b>Subtopic HUM 7.1 – Controller knowledge</b>			
ACS HUM 7.1.1	Explain how to maintain and update professional knowledge to retain competence in the operational environment.	2	<i>Optional content: Briefing, LOAs, NOTAM, AICs, Reports of accident/incident, VOLMET, ATIS, SIGMET</i>
<b>TOPIC HUM 8 COLLABORATIVE WORK</b>			
<b>Subtopic HUM 8.1 – Communication</b>			
ACS HUM 8.1.1	Use communication effectively in ATC.	3	
<b>Subtopic HUM 8.2 – Collaborative work within the same area of responsibility</b>			
ACS HUM 8.2.1	List communication means between controllers in charge of the same area of responsibility (sector or tower).	1	<i>Optional content: Electronic, written, verbal and non-verbal communication</i>
ACS HUM 8.2.2	Explain consequences of the use of communication means on effectiveness.	2	<i>Optional content: Strips legibility and encoding, labels designation, Feedback</i>
ACS HUM 8.2.3	List possible actions to provide a safe position handover.	1	<i>Optional content: rigour, preparation, overlap time</i>
ACS HUM 8.2.4	Explain consequences of a missed position handover process.	2	
<b>Subtopic HUM 8.3 – Collaborative work between different areas of responsibility</b>			
ACS HUM 8.3.1	List factors and means for an effective coordination between sectors and/or tower positions	1	<i>Optional content: Other sectors constraints, electronic coordination tools</i>
<b>Subtopic HUM 8.4 – Controller/pilot cooperation</b>			
ACS HUM 8.4.1	Describe parameters affecting controller/pilot cooperation	2	<i>Operational content: workload, mutual knowledge, controller vs pilot mental picture</i>

<b>TOPIC HUM 9 WORK ENVIRONMENT</b>			
<b>Subtopic HUM 9.1 – Ergonomics</b>			
ACS HUM 9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3	
<b>TOPIC HUM 10 ACT SAFETY MANAGEMENT</b>			
<b>Subtopic HUM 10.1 – Experience feedback</b>			
ACS HUM 10.1.1	State the importance of the controllers contribution to the experience feedback process.	1	<i>Optional content: voluntary reporting</i>
ACS HUM 10.1.2	Describe how reported occurrences are analysed.	2	<i>Optional content: ESARR 2, local procedures</i>
ACS HUM 10.1.3	Name the means used to disseminate recommendations.	1	<i>Optional content: Safety letters, safety board's web pages.</i>
ACS HUM 10.1.4	Explain the 'Just Culture' concept.	2	Benefits, prerequisites, constraints  <i>Optional content: EAM 2 GUI 6, GAIN report</i>
<b>Subtopic HUM 10.2 – Safety Investigation Branch</b>			
ACS HUM 10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety	2	
ACS HUM 10.2.2	Define working methods of Safety Investigation Branch.	1	

## Subject 8: EQUIPMENT AND SYSTEMS

<b>TOPIC EQPS 1 VOICE COMMUNICATION</b>			
<b>Subtopic EQPS 1.1 – Radio communications</b>			
ACS EQPS 1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures  <i>Optional content: Frequency selection, Standby equipment.</i>
ACS EQPS 1.1.2	Identify indications of operational status of radio equipment.	3	<i>Optional content: Indicator lights, Serviceability displays, Selector/frequency displays</i>
ACS EQPS 1.1.3	Consider radio range.	2	<i>Optional content: Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range.</i>
<b>Subtopic EQPS 1.2 – Other voice communications</b>			
ACS EQPS 1.2.1	Operate landline communications.	3	<i>Optional content: telephone interphone and intercom equipment</i>
<b>TOPIC EQPS 2 AUTOMATION IN ATS</b>			
<b>Subtopic EQPS 2.1 – Aeronautical fixed telecommunication network (AFTN)</b>			
ACS EQPS 2.1.1	Decode AFTN messages.	3	<i>Optional content: Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>
<b>Subtopic EQPS 2.2 – Automatic data interchange</b>			
ACS EQPS 2.2.1	Use automatic data transfer equipment where available.	3	<i>Optional content: Sequencing systems, Automated information and coordination, OLDI</i>
<b>TOPIC EQPS 3 CONTROLLER WORKING POSITION</b>			
<b>Subtopic EQPS 3.1 – Operation and monitoring of equipment</b>			
ACS EQPS 3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities.
ACS EQPS 3.1.2	Operate the equipment of the controller working position.	3	<i>Optional content: situation displays, Flight progress board, Flight data display, Radio Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>
ACS EQPS 3.1.3	Operate all available equipment in unusual/degraded/emergency situations	3	
<b>Subtopic EQPS 3.2 – Situation displays and information systems</b>			
ACS EQPS	Use situation displays.	3	

3.2.1			
ACS EQPS 3.2.2	Check availability of information material	3	
ACS EQPS 3.2.3	Obtain information from equipment	3	
<b>Subtopic EQPS 3.3 – Flight data systems</b>			
ACS EQPS 3.3.1	Use the flight data information at controller working position.	3	
<b>Subtopic EQPS 3.4 – Use of ATS surveillance system</b>			
ACS EQPS 3.4.1	Use the ATS surveillance system functions.	3	
ACS EQPS 3.4.2	Analyse the information provided by the ATS surveillance system.	4	
ACS EQPS 3.4.3	Assign codes.	4	
ACS EQPS 3.4.4	Appreciate the use of advanced surveillance technology.	3	<i>Optional content: Mode S, ADS-B, MLAT</i>
<b>Subtopic EQPS 3.5 – Advanced systems</b>			
ACS EQPS 3.5.1	Appreciate the use of controller pilot datalink communications when available.	3	
ACS EQPS 3.5.2	Appreciate the use of information provided by advanced systems.	3	<i>Optional content: Trajectory-based information, MTCD, MONA, etc.</i>
<b>TOPIC EQPS 4 FUTURE EQUIPMENT</b>			
<b>Subtopic EQPS 4.1 – New developments</b>			
ACS EQPS 4.1.1	Recognise future developments.	1	New advanced systems
<b>TOPIC EQPS 5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION</b>			
<b>Subtopic EQPS 5.1 – Reaction to limitations</b>			
ACS EQPS 5.1.1	Take account of the limitations of equipment and systems.	2	
ACS EQPS 5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities
<b>Subtopic EQPS 5.2 – Communication equipment degradation</b>			
ACS EQPS 5.2.1	Identify that communication equipment has degraded.	3	<i>Optional content: Ground-air and landline communications</i>
ACS EQPS 5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and landline communications, Alternative methods of transferring data.
<b>Subtopic EQPS 5.3 – Navigational equipment degradation</b>			
ACS EQPS 5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	<i>Optional content: VOR, Navigational aids.</i>

ACS EQPS 5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	<i>Optional content: Vertical separation, information to aircraft, navigational assistance, Seeking assistance from adjacent units.</i>
<b>Subtopic EQPS 5.4 – Surveillance equipment degradation</b>			
ACS EQPS 5.4.1	Identify that surveillance equipment has degraded.	3	Partial power failure, loss of certain facilities, Total failure
ACS EQPS 5.4.2	Apply contingency procedures in the event of surveillance equipment degradation.	3	<i>Optional content: Inform adjacent sectors, inform aircraft, apply vertical separation (emergency), Increased horizontal separation, Reduce the number of aircraft entering area of responsibility, Transfer aircraft to another unit</i>
<b>Subtopic EQPS 5.5 – ATC processing system degradation</b>			
ACS EQPS 5.5.1	Identify a processing system degradation.	3	<i>Optional content: FDPS, SDPS, Software processing of situation display.</i>
ACS EQPS 5.5.2	Apply contingency procedures in the event of a processing system degradation.	3	

**Subject 9: PROFESSIONAL ENVIRONMENT**

<b>TOPIC PEN 1 PROFESSIONAL ENVIRONMENT</b>			
<b>Subtopic PEN 1.1 – Contributors to ATS operations</b>			
ACS PEN 1.1.1	Characterise civil and military ATS activities.	2	<i>Optional content: familiarisation visits to TWR, APP, ACC, AIS, RCC, Air defence Units</i>
ACS PEN 1.1.2	Characterise other parties interfacing with ATS operations.	2	<i>Optional content: familiarisation visits to engineering services, fire and emergency services, airline operations offices.</i>
<b>Subtopic PEN 1.2 – Customer relations</b>			
ACS PEN 1.2.1	Identify the role of ATC as a service provider and requirements for ATS users.	3	<i>Optional content: familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators.</i>
<b>Subtopic PEN 1.3 – Environmental protection</b>			
ACS PEN 1.3.1	Describe processes used to ensure environmental protection.	2	<i>Optional content: night curfews, relations with local community, relations with environmental associations, relevant administrations.</i>

## Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

<b>TOPIC UDES 1 UNUSUAL/DEGRADED/ EMERGENCY SITUATION (UDES)</b>			
<b>Subtopic UDES 1.1 Overview of UDES</b>			
ACS UDES 1.1.1	List common unusual/degraded/emergency situations.	1	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual//Emergency situations, ambulance flights, GPWS alerts, airframe failure, runway incursion</i>
ACS UDES 1.1.2	Take into account the procedures for given unusual/degraded/emergency situations.	2	
ACS UDES 1.1.3	Take into account that procedures don't exist for all unusual/degraded/emergency situations.	2	<i>Optional content: real life examples</i>
ACS UDES 1.1.4	Consider how to evolution of a situation may have an impact on safety.	2	<i>Optional content: Separation, Information, Coordination</i>
<b>TOPIC UDES 2 SKILLS IMPROVEMENT</b>			
<b>Subtopic UDES 2.1 Communication effectiveness</b>			
ACS UDES 2.1.1	Ensure effective communication in all circumstance including the case where standard phraseology is not applicable.	4	<i>Phraseology, vocabulary, Readback, Silence instruction</i>
ACS UDES 2.1.2	Apply change of radiotelephony call sign.	3	<i>ICAO Doc 4444</i>
<b>Subtopic UDES 2.2 Avoidance of mental overload</b>			
ACS UDES 2.2.1	Describe actions to keep the control of the situation.	2	<i>Optional content: sector splitting, holding, flow management, task delegation</i>
ACS UDES 2.2.2	Organise priority of actions.	4	
ACS UDES 2.2.3	Ensure an effective circulation of information.	4	<i>Optional content: between executive and planner/coordinator, with the supervisor, between sectors, between ACC, APP and TWR, with ground staff, etc.</i>
ACS UDES 2.2.4	Consider asking for help.	2	
<b>Subtopic UDES 2.3 Air/ground cooperation</b>			
ACS UDES 2.3.1	Collect appropriate information relevant for the situation.	3	
ACS UDES 2.3.2	Assist the pilot.	3	<i>Pilot workload</i> <i>Optional content: Instructions, information, support, human factors, etc.</i>

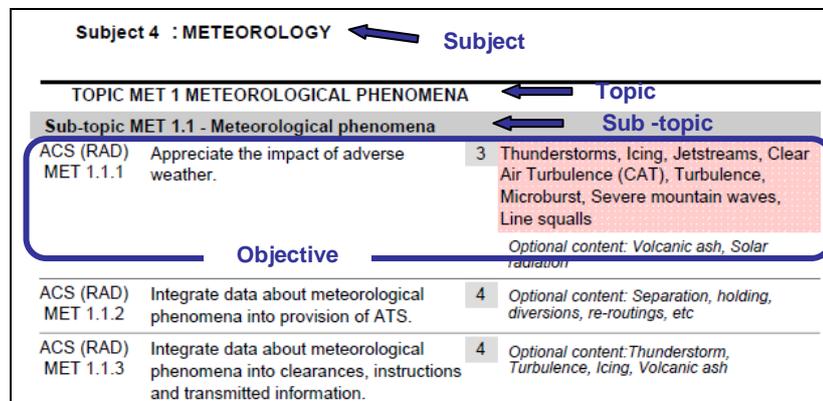
<b>TOPIC UDES 3 PROCEDURES FOR UNUSUAL/DEGRADED/EMERGENCY SITUATIONS</b>			
<b>Subtopic UDES 3.1 Application of procedures for UDES</b>			
ACS UDES 3.1.1	Apply the procedures for given unusual/degraded/emergency situations.	3	<i>Optional content: EATM Guidelines for Controller Training in the Handling of Unusual/Emergency Situations, Ambulance flights, GPWS alerts airframe failure</i>
<b>Subtopic UDES 3.2 Radio failure</b>			
ACS UDES 3.2.1	Describe the procedures followed by a pilot when he/she experiences complete or partial radio failure.	2	<b>ICAO Doc 7030</b> <i>Optional content: military procedures</i>
ACS UDES 3.2.2	Apply the procedures to be followed when a pilot experiences complete or partial radio failure.	3	<i>Optional content: Prolonged of communication</i>
<b>Subtopic UDES 3.3 Unlawful interference and aircraft bomb threat</b>			
ACS UDES 3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.4 Strayed or unidentified aircraft</b>			
ACS UDES 3.4.1	Apply the procedures in the case of strayed aircraft.	3	<b>ICAO Doc 4444</b> <i>Optional content: Inside controlled airspace, Outside controlled airspace</i>
ACS UDES 3.4.2	Apply the procedures in the case of unidentified aircraft.	3	<b>ICAO Doc 4444</b>
<b>Subtopic UDES 3.5 Diversions</b>			
ACS UDES 3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	<b>Track/heading, Distance, Other navigational assistance</b> <i>Optional content: Nearest most suitable aerodrome</i>
<b>Subtopic UDES 3.6 Transponder failure</b>			
ACS UDES 3.6.1	Apply procedures in the event of an SSR transponder failure.	3	<b>ICAO Doc 4441 ICAO Doc 7030</b> <i>Optional content: total/partial failure, impact on ADS-B/Mode S capability</i>

**Supplements**

## Supplement 1

**SYLLABI STRUCTURE — HOW TO READ THE TABLES****21. Structure of the Rating training syllabi**

- k. Each Rating training has been structured as a syllabus, as follows:
- xi. Each syllabus is divided into subjects, which are divided into topics that are in turn divided into subtopics. This structure is used to create and classify the objectives. There can be one or several objectives linked to each Subtopic.
  - xii. Objectives are assigned to a specific subject which deals with the knowledge and skills needed to accomplish the subject objective contained in Appendix 9 to Regulation (EU) No .../... (Reference to ATCO.D.010 (a)(2)(vi) Area Control Surveillance Rating — ACS)

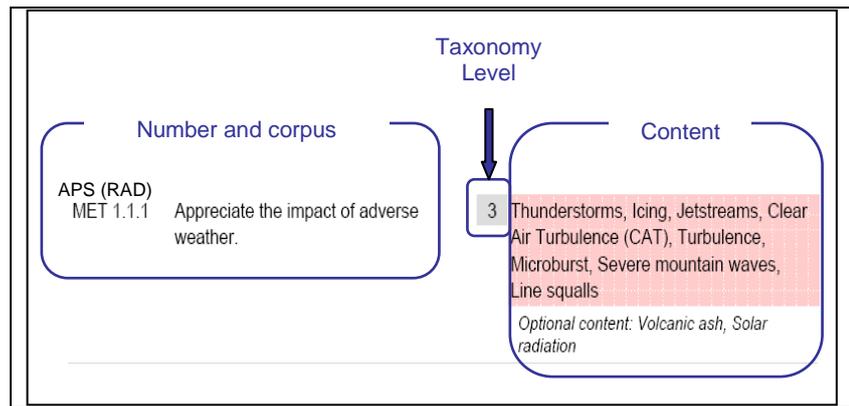
**Figure 1: Layout of syllabus**

- l. The following principles may be applied to the development of a training course that is based on any of the syllabi:
- xvi. The structure of the syllabi and the order of the objectives contained within Appendix 9 to Regulation (EU) No .../... is neither intended to convey a pedagogical sequence nor to indicate a relative level of importance.
  - xvii. No objective from the Basic syllabus is repeated as 'a refresher' in the Rating syllabi.
  - xviii. The number of objectives contained within a Subtopic does not necessarily signify how long it should take to teach that Subtopic. For example, a Subtopic containing five relatively straightforward objectives, may take a shorter time to be taught than another Subtopic containing two complex objectives.

**22. Structure of objectives**

- f. An objective consists of three elements:
- xvi. The corpus, which is a description of the required performance. It always contains an action verb to ensure that the outcome is observable. The action verb is always associated with a defined taxonomy.

- xvii. The level, which indicates numerically the taxonomy of the action verb.
- xviii. The content, which may be implicit or explicit. The explicit content is written in the content field, while the implicit content is not but, instead, is implied in the corpus of the objective and other elements (syllabus, subject, etc.). Content that is a required part of the objective is written in the red shaded field. Optional content, written in italics, may be used if considered appropriate.



**Figure 2: Layout of an objective**

### 23. Common Objectives

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

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

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

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

- d. As a general principle, the rating subject Human Factors is identical in each Rating training syllabi and can be considered as containing common objectives because the context is always the same. This means that the rating training objectives relating to Human Factors need only be taught once. If a learner is acquiring an additional rating, he/she would not be required to repeat the Human Factors objectives.

24. Action verbs that support the Taxonomy for training objectives:

jj. The five taxonomy levels should be understood to have the following levels of complexity:

kk. Action verbs for Level 1

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

<b>L1 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Define</b>	State what it is and what its limits are; state the definition	Define ATC service
<b>Draw</b>	Produce a picture, pattern or diagram	Draw the block diagram Draw a holding pattern
<b>List</b>	Say one after the other	List the main structure components of an aircraft
<b>Name</b>	Give name of objects or procedures	Name the components of an ILS Name the key national and international aviation organisations.
<b>Quote</b>	Repeat of what is written or said to underline	Quote ICAO definition of ATC service
<b>Recognise</b>	To know what it is because you've seen it before	Recognise the information contained in the different parts of the AIP.
<b>State</b>	Say or write in a formal or definite way	State the meteorological hazards to aviation.

II. Action verbs for Level 2

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

<b>L2 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Characterise</b>	To describe the quality of features in something	Characterise the main items of ATC equipment
<b>Consider</b>	To think carefully about it	Consider the benefits of Critical Incident Stress Management (CISM).
<b>Demonstrate</b>	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the importance of good communications in ATC.
<b>Describe</b>	Say what it is like or what happened	Describe the methods by which ICAO notifies and implements legislation.
<b>Differentiate</b>	Show the differences	Differentiate between different

	between things	types of visibility.
<b>Explain</b>	Give details about something or describe so that it can be understood	Explain the purpose and function of ICAO
<b>Take account of</b>	Take into consideration before deciding	Take into account the wind influence when calculating a ground speed. Take account of the limitations of equipment and systems.

mm. Action verbs for Level 3

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

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
<b>Act</b>	Carry out, execute	Act to reduce stress.
<b>Apply</b>	Use something in a situation or activity	Apply separation.
<b>Appreciate</b>	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate the necessity for coordination. (The learner says that the coordination will be done and with whom, he/she does not perform the actual coordination).
<b>Assist</b>	Help somebody to do a job by doing part of it	Assist the pilot
<b>Calculate</b>	To discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do	Calculate appropriate levels Calculate conversions between the three north designations.
<b>Check</b>	Make sure the information is correct (satisfactory)	Check the accuracy of flight data information Check availability of information material.
<b>Choose</b>	Select out of number, decide to do one thing rather than another	Choose appropriate levels. Choose which aircraft should be vectored
<b>Collect</b>	Assemble, accumulate, bring or come together	Collect examples of different types of error, their causes and consequences in ATC.
<b>Conduct</b>	Lead, guide	Conduct coordination
<b>Confirm</b>	Establish more firmly, corroborate	Confirm sequence order
<b>Decode</b>	Turn into ordinary writing, decipher	Decode the content of weather reports and forecast
<b>Encode</b>	Put into code or cipher	Encode and decode flight plans (including supplementary information).
<b>Estimate</b>	Form an approximate judgement of a number, form an opinion	Estimate distance and direction between two points
<b>Execute</b>	Perform action	Execute corrective actions.
<b>Extract</b>	Copy out, make extracts from, find, deduce	Extract pertinent data from relevant sources to produce a flight progress

<b>L3 Verb</b>	<b>Definition</b>	<b>Example</b>
		display.
<b>Identify</b>	Associate oneself inseparably with, establish the identity	Identify the role of ATC as a service provider and the requirements of the ATS users. Identify an aircraft
<b>Inform</b>	Inspire, tell	Inform supervisor of situation.
<b>Initiate</b>	Begin, set going, originate	Initiate appropriate coordination
<b>Input</b>	Enter in the system	Input data
<b>Issue</b>	Send forth, publish	Issue appropriate ATC clearances. Issue appropriate traffic information.
<b>Maintain</b>	Carry on, keep up, refresh	Maintain flight data display
<b>Measure</b>	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure distance on a map
<b>Monitor</b>	Keep under observation	Monitor traffic Monitor the effect of human information processing factors on decision making.
<b>Notify</b>	Make known, announce, report	Notify runway in use
<b>Obtain</b>	Acquire easily, without research	Obtain meteorological information Obtain information from the relieving controller.
<b>Operate</b>	Conduct work on equipment	Operate the equipment of the controller working position.
<b>Pass</b>	Move, cause to go, transmit	Pass essential traffic information without delay
<b>Perform</b>	Carry into effect, go through, execute	Perform communication effectively
<b>Process</b>	To put through the steps of a prescribed procedure	Process pertinent data on data displays.
<b>Record</b>	Register, set down for remembrance or reference	Record information by writing effectively
<b>Relay</b>	Arrange in, provide with, replace by ...	Relay meteorological information from pilot reports.
<b>Respond</b>	Make answer, perform answering or corresponding action	Respond to loss/doubt concerning identification. Respond to distress and urgency messages and signals.
<b>Scan</b>	Continuously observe rapidly, sequentially and selectively in order to	Scan data display

L3 Verb	Definition	Example
	extract relevant data	
<b>Transfer</b>	Hand over	Transfer information to the relieving controller
<b>Update</b>	Refresh, bring up-to-date	Update the data display to accurately reflect the traffic situation.
<b>Use</b>	Employ for a purpose, handle as instrument, put into operation	Use approved phraseology. Use the available means for coordination.
<b>Verify</b>	Establish truth of	Verify the mode C information

nn. Action verbs for Level 4

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

L4 Verb	Definition	Example
<b>Acquire</b>	Gain by oneself and for oneself, obtain after research	Acquire relevant aeronautical information
<b>Adjust</b>	Change to a new position, value or setting	Adjust the surveillance system display
<b>Allocate</b>	Assign, devote	Allocate levels (height, altitude, flight level) according to altimetry data.
<b>Analyse</b>	Examine minutely the constitution of	Analyse examples of pilot and controller communication for effectiveness. Analyse the information provided by the radar equipment.
<b>Assign</b>	Allot as a share, make over	Assign codes.
<b>Coordinate</b>	Bring part into proper relation	Coordinate runway in use. Coordinate in the provision of FIS.
<b>Comply</b>	Act in accordance with	Comply with rules
<b>Delegate</b>	Commit authority to somebody	Delegate separation to pilots in the case of aircraft executing successive visual approaches.
<b>Detect</b>	Discover existence of	Detect potential conflict
<b>Ensure</b>	Make safe, make certain	Ensure the agreed course of action is carried out
<b>Expedite</b>	Assist the progress of, do speedily	Expedite traffic
<b>Integrate</b>	Combine into a whole, complete by addition of	Integrate appropriate ATC clearances in control service.

L4 Verb	Definition	Example
	parts	
<b>Manage</b>	Handle, wield, conduct	Manage traffic on the manoeuvring area. Manage traffic in accordance with procedural changes.
<b>Organise</b>	Give orderly structure to, frame and put into working order	Organise pertinent data on data displays. Organise priority of actions.
<b>Predict</b>	Forecast	Predict positions of aircraft in the aerodrome traffic and taxi circuits.
<b>Provide</b>	Supply, furnish	Provide radar separation. Provide FIS.
<b>Relate</b>	Establish link with	Relate a pressure setting to an altitude

## oo. Action verbs for Level 5

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

L5 verb	Definition	Example
<b>Assess</b>	Estimate value or difficulty, evaluate, appraise	Assess workload
<b>Balance</b>	Weigh (a question, two arguments, etc., against each other)	Balance the workload with the traffic demand.
<b>Discuss</b>	Investigate by reasoning or argument	Discuss the impact of regulation.
<b>Evaluate</b>	Ascertain amount of, find numerical expression for	Evaluate the necessary information to be provided to pilots in need of navigational assistance.
<b>Interpret</b>	To decide on something's meaning or significance when there is a choice	Interpret operational information.
<b>Resolve</b>	Solve, clear up, settle	Resolve conflict
<b>Select</b>	Pick out as best or most suitable	Select the runway in use
<b>Theorise</b>	Extract general principles from a particular experience	Theorise the resolution of conflict between a slow and a fast aircraft
<b>Validate</b>	Make valid, ratify, prove valid, show or confirm the validity of something	Validate one radar vectoring option to expedite the traffic

## pp. Application of taxonomy levels to practically-based objectives

- xxi. Objectives at taxonomy level 3 or higher, which are of a practical nature, related to all subjects except ATM, may be achieved by any suitable type of practical training methods e.g. hands on, plotting on charts, etc.
  - xxii. Objectives at taxonomy level 3 or higher, for the ATM subject (Basic and Rating), are practical by nature and require the integration of several knowledge areas and skills at the same time, e.g. vectoring of an aircraft requires knowledge and skills in the areas of radio telephony, aircraft performance, navigation and radar theory. Therefore, ATM level 3 objectives should be achieved through the use of a part task trainer or a simulator.
  - xxiii. ATM level 4 objectives should be achieved for the most part through the use of a simulator. A part task trainer, which presents operational situations at an enforced pace, may be used to achieve some ATM level 4 objectives.
  - xxiv. ATM level 5 objectives should be achieved through the use of a simulator.
-

## Supplement 2

### Abbreviations

For the purposes of these AMCs, the following abbreviations and acronyms shall apply:

Abbreviation	Meaning
ABAS	Aircraft-based Augmentation System (EGNOS)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACP	Area Control Procedural Rating
ACFT	Aircraft (subject)
ACN	Aircraft Classification Number
ACS	Area Control Surveillance Rating
ADF	Automatic Direction Finding System
ADI	Aerodrome Control Instrument
ADS	Automatic Dependent Surveillance
ADV	Aerodrome Control Visual Rating
ADVS	Advisory Service
AEA	Association of European Airlines
AFIL	Air Filed Flight Plan
AFTN	Aeronautical fixed telecommunication network
AGA	Aerodromes
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIRAC SUP	AIRAC Supplement
AIREP	Air-Report
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AIS	Aeronautical Information Service
ALRS	Alerting Service
AMC	Acceptable Means of Compliance
APM	Approach Path Monitor
APP	Approach Control / Centre / Procedural Rating
APS	Approach Control Surveillance Rating
APV	Approach Procedure with Vertical guidance
APW	Area Proximity Warning
ASDA	Accelerate Stop Distance Available
ASM	Airspace Management

ASMGCS	Advanced Surface Movement Guidance and Control Systems
ATC	Air Traffic Control
ATCEUC	Air Traffic Controllers European Unions Co-ordination
ATCO	Air Traffic Controller
ATCS	Air Traffic Control Service
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
AVASI	Advanced Visual Approach Slope Indicator
B-RNAV	Basic Area Navigation
BIRDTAM	Bird hazard NOTAM (NOTAM reporting bird hazard)
CANSO	Civil Air Navigation Services Organisation
CAT	Clear Air Turbulence
CBA	Cross Border Area
CBT	Computer Based Training
CCIS	Closed Circuit Information System
CDR	Conditional Route
CISM	Critical Incident Stress Management
CPDLC	Controller Pilot Data Link Communications
CPL	Current Flight Plan
D-GPS	Differential Global Positioning System
DFTI	Distance from Touchdown Indicator
DME	Distance Measuring Equipment
Doc	Document
EAM	ESARR Advisory Material
EASA	European Aviation Safety Agency
EAT	Expected Approach Time
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMP	European Air Traffic Management Programme
EC	European Commission
ECAC	European Civil Aviation Conference
EET	Estimated Elapsed Time
EFIS	Electronic Flight Instrument System
EGNOS	European Geostationary Overlay Service
EQPS	Equipment and Systems (subject)

ESARR	Eurocontrol Safety Regulatory Requirements
ETF	European Transport Workers' Federation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAB	Functional Airspace Block
FDPS	Flight Data Processing System
FIR	Flight Information Region
FIS	Flight Information Service
FMS	Flight Management System
FPB	Flight Progress Board
FPL	Flight Plan
FUA	Flexible Use of Airspace
GAIN Report	Global Aviation Information Network Report
GBAS	Ground Based Augmentation System
GLONASS	Global Orbiting Navigation Satellite System
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GUI	Guidelines
HBK	Handbook
HF	High Frequency
HUM	Human Factors (subject)
IACA	International Air Carrier Association
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFALPA	International Federation of Airline Pilots Association
IFATCA	International Federation of Air Traffic Controllers Associations
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation System
INTR	Introduction to the course (subject)
IRS	Inertial Reference System
IRVR	Instrument Runway Visual Range
ISA	International Standard Atmosphere
ITU	International Telecommunications Union

LAW	Aviation Law (subject)
LDA	Landing Distance Available
LLZ	Localizer
LNAV	Lateral Navigation
LOA	Letter of Agreement
LPV	Lateral Precision with Vertical guidance approach
MET	Meteorology
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
Mode A	SSR identification code
Mode C	SSR Mode C (Pronounced: Mode Charlie)
Mode S	Mode Select
MONA	Monitoring Aids
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
NAV	Navigation (subject)
NAVAID	Navigation(al) Aid
NDB	Non-Directional Beacon
No.	Number
NOTAM	Notice to Airmen
OJT	On the Job Training
OLDI	On-Line Data Interchange
P-RNAV	Precision Area Navigation
PANS	Procedures for Air Navigation Services
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PEN	Professional Environment (subject)
PSR	Primary Surveillance Radar
PTP	Part Time Practice
QDM	Magnetic Heading
QDR	Magnetic Bearing
QFE	Atmospheric pressure at aerodrome elevation
QNH	Atmospheric pressure at mean sea level
QTF	The position of the transmitting station according to the bearings taken by the D/F station
RAIM	Receiver Autonomous Integrity Monitoring

RCC	Rescue Coordination Centre
RDPS	Radar Data Processing System
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP-RNAV	Required Navigation Performance-Area Navigation
ROC	Rate of Climb
RPL	Stored Flight Plan
RTF	Radio Telephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SADIS	Satellite Distribution of World Area Forecast System
SAR	Search and Rescue
SARPs	Standards and Recommended Practices (ICAO)
SBAS	Satellite Based Augmentation System
SELCAL	Selective Calling
SERA	Standardised European Rules of the Air
SHELL (model)	Software, Hardware, Environment, Live ware, Live ware Model
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SMR	Surface Movement Radar
SNOWTAM	NOTAM on SNOW conditions
SPECI	Aviation Selected Special Weather Report
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
SVFR	Special Visual Flight Rules Flight
TACAN	UHF Tactical Air Navigation Aid
TAF	Terminal Area (Aerodrome) Forecast
TCAC	Tropical Cyclone Advisory Centre
TODA	Take Off Distance Available
TORA	Take Off Run Available
TRM	Team Resource Management
TSA	Temporary Segregated Area
TWR	Tower Control Unit (Aerodrome Control Tower)
UDES	Unusual Degraded Emergency Situations
UDF	Ultra High Frequency Direction Finder
UHF	Ultra High Frequency

UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VASI	Visual Approach Slope Indicator
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOLMET	Routine Weather Reports Broadcast on VHF
VOR	VHF Omni-directional Radio Range
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WGS-84	World Geodetic System 84