

Subject 1 : INTRODUCTION TO THE COURSE

The general objective is:

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

1 COURSE MANAGEMENT**1.1 Course Introduction**

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

1.2.1	State course administration.	1		ALL
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1.3 Study Material and Training Documentation

1.3.1	Use appropriate documentation and their sources for course studies.	3	<i>e.g. Training documentation, library, CBT library, Web, Learning Management Server</i>	ALL
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1.3.2	Integrate appropriate information into course studies.	4	<i>e.g. Training documentation, supplementary information, library</i>	ALL
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2 INTRODUCTION TO THE ATC TRAINING COURSE**2.1 Course Content and Organisation**

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

2.2.1	Recognise the feedback mechanisms available.	1	Training progress, Assessment, Briefing, Debriefing, Learner/instructor feedback, Instructor/instructor feedback	ALL
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2.2.2	Describe the positive effect of working and learning together with fellow course participants.	2	Team work in theoretical and practical training	ALL
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2.3 The Assessment Process

2.3.1 Describe the assessment process. 2

ALL

Subject 2 : AVIATION LAW

The general objective is:

Learners shall:

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

1 ATC LICENSING / CERTIFICATE OF COMPETENCE**1.1 Privileges and Conditions**

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

2 RULES AND REGULATIONS**2.1 Reports**

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

2.2 Airspace

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

Subject 3 : AIR TRAFFIC MANAGEMENT

The general objective is:

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

1 AIR TRAFFIC SERVICES AND AIRSPACE MANAGEMENT**1.1 Air Traffic Control (ATC) Service**

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

1.2 Flight Information Service (FIS)

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

1.3 Alerting Service (ALRS)

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

1.4 ATS System Capacity and Air Traffic Flow Management

1.4.1	Appreciate principles of ATFM.	3	<i>e.g. Working principles of ATFM, FUA, free flight, etc.</i>	APP ACP APS ACS
1.4.2	Apply flow management procedures.	3		APP ACP APS ACS
1.4.3	Organise traffic flows and patterns to take account of airspace boundaries.	4	<i>e.g. Civil and Military, Controlled, Uncontrolled, Advisory, Restricted, Danger, Prohibited, Special rules, Sector boundaries, National boundaries, FIR boundaries, Delegated airspace, Transfer of control, Transfer of communications, En-route, Off-route</i>	APP ACP APS ACS
1.4.4	Organise traffic flows and patterns to take account of areas of responsibility.	4		APP ACP APS ACS

1.4.5	Inform supervisor of situation.	3	<i>e.g. Abnormal situations, decrease in sector capacity, limitations on systems and equipment, changes in workload/capacity, relevant information (e.g. reported ground-based incidents, forest fire, smoke, oil pollution), unusual meteorological conditions</i>	APP ACP APS ACS
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1.5 Airspace Management (ASM)

1.5.1	Appreciate the principles and means of ASM.	3	<i>e.g. FUA, ICAO Doc 4444, EUROCONTROL ASM HBK - Airspace Management Handbook for the application of FUA, TSAs, CDRs, CBAs</i>	APP ACP APS ACS
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2 COMMUNICATION

2.1 Effective Communication

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

3 ATC CLEARANCES AND ATC INSTRUCTIONS

3.1 ATC Clearances

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

3.2 ATC Instructions

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

4 COORDINATION

4.1 Necessity

4.1.1	Identify the need for coordination.	3		ALL
4.2 Tools and Methods				
4.2.1	Use the available tools for coordination.	3	<i>e.g. Electronic transfer of flight data, Telephone, Interphone, Intercom, Direct speech, Radiotelephone (RTF), Local agreements, automated system coordination</i>	ALL
4.3 Coordination Procedures				
4.3.1	Initiate appropriate coordination.	3	Delegation/transfer of responsibility for air-ground communications and separation, transfer of control, etc. ICAO Doc 4444 <i>e.g. release point</i>	ALL
4.3.2	Analyse effect of coordination requested by an adjacent position/unit.	4	<i>e.g. Delegation/transfer of responsibility for air-ground communications and separation, release point, transfer of control, etc.</i>	ALL
4.3.3	Select, after negotiation, an appropriate course of action.	5	When additional traffic cannot be accepted by adjacent position/unit, When additional traffic cannot be accepted by own position/unit, etc.	ALL
4.3.4	Ensure the agreed course of action is carried out.	4		ALL
4.3.5	Coordinate in the provision of FIS.	4	ICAO Doc 4444	ALL
4.3.6	Coordinate in the provision of ALRS.	4	ICAO Doc 4444	ALL
5 ALTIMETRY AND LEVEL ALLOCATION				
5.1 Altimetry				
5.1.1	Calculate appropriate levels.	3	<i>e.g. Transition level, transition layer, height, lowest useable flight level, vertical distance to airspace boundaries</i>	ALL
5.1.2	Allocate levels (height, altitude, flight level) according to altimetry data.	4	ICAO Doc 8168	ALL
5.1.3	Ensure separation according to altimetry data.	4	<i>e.g. Transition level, transition altitude, transition layer, height, flight level, altitude, vertical distance to airspace boundaries</i>	ALL
5.2 Terrain Clearance				
5.2.1	Provide planning, coordination and control actions appropriate to the rules for minimum safe levels and terrain clearance.	4	<i>e.g. Terrain clearance dimensions, Minimum safe altitudes, Transition level, Minimum flight level, Minimum sector altitude</i>	APP ACP

6 SEPARATIONS

6.1 Vertical Separation

6.1.1	Provide standard vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030, Level allocation, During climb/descent, Rate of climb/descent, RVSM, non-RVSM aircraft	APP ACP APS ACS
6.1.2	Provide increased vertical separation.	4	ICAO Doc 4444, ICAO Doc 7030 <i>e.g. Level allocation, During climb/descent, Rate of climb/descent</i>	APP ACP APS ACS
6.1.3	Appreciate the application of vertical emergency separation.	3	ICAO Doc 4444, ICAO Doc 7030	APP ACP APS ACS

6.2 Horizontal Separation

6.2.1	Provide longitudinal separation.	4	Based on time, Based on distance (DME and/or GNSS, RNAV), Based on time and ATS surveillance systems observation - European Region only	APP
6.2.2	Provide lateral separation.	4	ICAO Doc 4444, ICAO Doc 7030	ACP APP
6.2.3	Provide track separation.	4		ACP APP
6.2.4	Provide geographical separation.	4	Visual, Using navigation aids, Area Navigation	ACP APP

6.3 Delegation of Separation

6.3.1	Delegate separation to pilots in the case of aircraft executing successive visual approaches.	4		APP APS
6.3.2	Appreciate the conditions which must be met when delegating separation to pilots to fly maintaining own separation while in VMC.	3		APP APS
6.3.3	Provide contingency separation in the event of a navigation aid failure.	4	Vertical, Standard, Emergency	ACP APP

7 COLLISION AVOIDANCE AND SAFETY NETS

7.1 Airborne

7.1.1	Respond to pilot notification of actions based on airborne systems warnings.	3	ACAS <i>e.g. GPWS</i>	APP ACP APS ACS
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7.2 ACAS

7.2.1	State the function of Traffic Alerts and Resolution Advisories.	1	ICAO Doc 8168	ALL
7.2.2	List, in the correct order, the actions of the pilot following the generation of ACAS event.	1	ICAO Doc 8168	ALL
7.2.3	Describe the controller responsibility during and following an RA reported by pilot.	2	ICAO Doc 4444	ALL
7.2.4	List the ACAS limitations.	1	ICAO Doc 9863	ALL
7.2.5	Differentiate between ACAS advisory thresholds and ATC separation standards.	2	ICAO Doc 9863	ALL

8 DATA DISPLAY

8.1 Data Management

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

9 OPERATIONAL ENVIRONMENT

9.1 Integrity of the Operational Environment

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

9.2 Verification of the Currency of Operational Procedures

9.2.1	Check all relevant documentation before managing traffic.	3	<i>e.g. Briefing, LOAs, NOTAM, AICs</i>	ALL
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9.2.2	Manage traffic in accordance with procedural changes.	4		APP ACP APS ACS
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9.3 Handover - Takeover

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

10 PROVISION OF CONTROL SERVICE

10.1 Responsibility and Processing of Information

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

10.2 Approach Control

10.2.1	Explain the responsibility for the provision of an approach procedural control service.	2	ICAO Doc 4444, ICAO Annex 11, Local operation manuals	APP
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11 HOLDING

11.1 General Holding Procedures

11.1.1	Apply holding procedures.	3	ICAO Doc 4444, holding instructions, allocation of holding levels, onward clearance times	APP ACP APS ACS
11.1.2	Appreciate the effect of: wind, aircraft speed, rate of turn, height, aircraft type, aircraft performance.	3		APP ACP APS ACS
11.2 Vertical Separation				
11.2.1	Provide vertical separation between aircraft in a holding pattern.	4		APP ACP APS ACS
11.2.2	Provide vertical separation between aircraft in a holding pattern and other aircraft.	4		APP ACP APS ACS
11.3 Approaching Aircraft				
11.3.1	Calculate Expected Approach Times (EATs) and Expected Onward Clearance times.	3		APP APS
11.3.2	Organise the traffic landing sequence in a holding pattern.	4	<i>Change of sequence due to: e.g. company preference, aircraft performance, aircraft approach capability, ILS categories, flow control management</i>	APP APS

Subject 4 : METEOROLOGY

The general objective is:

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

1 METEOROLOGICAL PHENOMENA**1.1 Meteorological Phenomena**

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

2 SOURCES OF METEOROLOGICAL DATA**2.1 Sources of meteorological information**

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

Subject 5 : NAVIGATION

The general objective is:

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

1 MAPS AND AERONAUTICAL CHARTS**1.1 Maps and Charts**

1.1.1	Use relevant maps and charts.	3		APP ACP APS ACS
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2 INSTRUMENTAL NAVIGATION**2.1 Navigational Systems**

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

2.2 Navigational Assistance

2.2.1	Evaluate the necessary information to be provided to pilots in need of navigational assistance.	5	<i>e.g. Nearest most suitable aerodrome, Track, Heading, Distance, Aerodrome information, Any other navigational assistance relevant at the time</i>	APP ACP
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2.3 Satellite-based Systems

2.3.1	State the different operations associated with satellite-based systems.	1	<i>e.g. NPA, APV-baro VNAV, APV, LPV, Precision approach, ICAO Doc 8168 Vol.2</i>	ADI APP APS
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Subject 6 : AIRCRAFT

The general objective is:

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

1 AIRCRAFT INSTRUMENTS**1.1 Aircraft Instruments**

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

2 AIRCRAFT CATEGORIES**2.1 Wake Turbulence Categories**

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

2.2 ICAO Approach Categories

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

3 FACTORS AFFECTING AIRCRAFT PERFORMANCE**3.1 Climb**

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

3.2 Cruise

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

Subject 7 : HUMAN FACTORS

The general objective is:

Learners shall:

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

1 PSYCHOLOGICAL FACTORS**1.1 Cognitive**

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

2 MEDICAL AND PHYSIOLOGICAL FACTORS**2.1 Fatigue**

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

2.2 Fitness

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

3 SOCIAL AND ORGANISATIONAL FACTORS**3.1 Team Resource Management (TRM)**

3.1.1	State the objectives of TRM.	1	<i>e.g. TRM course, EUROCONTROL Guidelines for the development of TRM training</i>	ALL
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3.1.2	State the content of the TRM concept.	1	<i>e.g. team work, human error, team roles, stress, decision making, communication, situational awareness</i>	ALL
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3.2 Teamwork and Team Roles

3.2.1	Identify reasons for conflict.	3		ALL
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3.2.2	Describe actions to prevent human conflicts.	2		ALL
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3.2.3	Describe strategies to cope with human conflicts.	2	<i>e.g. in your team, in the simulator</i>	ALL
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3.3 Responsible behaviour

3.3.1	Consider the factors which influence responsible behaviour.	2	<i>e.g. situation, team, personal situation and judgement, instance of justification, moral motivation, personality</i>	ALL
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3.3.2	Apply responsible judgement.	3	Case study and discussion about a dilemma situation	ALL
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4 STRESS

4.1 Stress

4.1.1	Recognise the effects of stress on performance.	1	Stress and its symptoms in self and in others	ALL
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4.2 Stress Management

4.2.1	Act to reduce stress.	3	The effect of personality in coping with stress, The benefits of active stress management	ALL
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4.2.2	Obtain assistance in stressful situations.	3	<i>e.g. The benefits of offering, accepting and asking for help in stressful situations</i>	ALL
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4.2.3	Recognise the effect of shocking and stressful events.	1	Self and others, Abnormal situations, CISM	ALL
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4.2.4	Consider the benefits of Critical Incident Stress Management (CISM).	2		ALL
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4.2.5	Explain procedures used following an incident/accident.	2	<i>e.g. CISM, Counselling, Human element</i>	ALL
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5 HUMAN ERROR

5.1 Human Error

5.1.1	Explain the relationship between error and safety.	2	Number and combination of errors, pro-active versus reactive approach to discovery of error	ALL
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5.1.2	Differentiate between the types of error.	2	<i>e.g. Slips, Lapses, Mistakes</i>	ALL
5.1.3	Describe error-prone conditions.	2	<i>e.g. increase in traffic</i>	ALL
5.1.4	Collect examples of different error types, their causes and consequences in ATC.	3		ALL
5.1.5	Explain how to detect errors to compensate for them.	2	STCA, MSAW, individual and collective strategy	ALL
5.1.6	Execute corrective actions.	3	Error compensation	ALL

5.2 Violation of rules

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

6.1 Efficiency

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

7.1 Controller Knowledge

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

8.1 Communication

8.1.1	Use communication effectively in ATC.	3		ALL
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8.2 Collaborative work within the same area of responsibility

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

8.2.3	List possible actions to provide a safe position hand over.	1	<i>e.g. rigour, preparation, overlap time</i>	ALL
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8.2.4	Explain consequences of a missed position hand over process.	2		ALL
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8.3 Collaborative work between different areas of responsibility

8.3.1	List factors and means for an effective coordination between sectors and/or tower positions.	1	<i>e.g. Other sectors constraints, electronic coordination tools</i>	ALL
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8.4 Controller/Pilot Cooperation

8.4.1	Describe parameters affecting controller/pilot cooperation.	2	<i>e.g. workload, mutual knowledge, controller vs. pilot mental picture</i>	ALL
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9 WORK ENVIRONMENT

9.1 Ergonomics

9.1.1	Appreciate the impact of working position ergonomics on controller activity.	3		ALL
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10 ATC SAFETY MANAGEMENT

10.1 Experience feedback

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

10.2.1	Describe role and mission of Safety Investigation Branch in the improvement of safety.	2		ALL
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10.2.2	Define working methods of Safety Investigation Branch.	1		ALL
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Subject 8 : EQUIPMENT AND SYSTEMS

The general objective is:

Learners shall:

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

1 VOICE COMMUNICATIONS**1.1 Radio Communications**

1.1.1	Operate two-way communication equipment.	3	Transmit/receive switches, Procedures <i>e.g. Frequency selection, Stand-by equipment</i>	APP ACP APS ACS
1.1.2	Identify indications of operational status of radio equipment.	3	<i>e.g. Indicator lights, Serviceability displays, Selector/frequency displays</i>	ALL
1.1.3	Consider radio range.	2	<i>e.g. Transfer to another frequency, Apparent radio failure, Failure to establish radio contact, Frequency protection range</i>	APP ACP APS ACS

1.2 Other voice communications

1.2.1	Operate land line communications.	3	<i>e.g. telephone, interphone and intercom equipment</i>	ALL
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2 AUTOMATION IN ATS**2.1 Aeronautical Fixed Telecommunication Network (AFTN)**

2.1.1	Decode AFTN messages.	3	<i>e.g. Movement and control messages, NOTAM, SNOWTAM, BIRDTAM, etc.</i>	ALL
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2.2 Automatic Data Interchange

2.2.1	Use automatic data transfer equipment.	3	Available Datalinks <i>e.g. Sequencing systems, Automated information and coordination, OLDI</i>	ALL
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3 CONTROLLER WORKING POSITION**3.1 General**

3.1.1	Monitor the technical integrity of the controller working position.	3	Notification procedures, Responsibilities	ALL
3.1.2	Operate the equipment of the controller working position.	3	<i>e.g. Situation displays, Flight progress board, Flight data display, Radio, Telephone, Maps and charts, Strip-printer, Clock, Information monitors (CCIS), UDF/VDF</i>	ALL
3.1.3	Operate all available equipment in unusual/degraded/emergency situations.	3		ALL

3.2 Situation displays and Information Systems

3.2.1	Use situation displays.	3		ALL
3.2.2	Check availability of information material.	3		ALL
3.2.3	Obtain the information from equipment.	3		APP ACP APS ACS

3.3 Flight Data Systems

3.3.1	Use the flight data information at controller working position.	3		ALL
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4 FUTURE EQUIPMENT

4.1 New Developments

4.1.1	Recognise future developments.	1	New advanced systems	ALL
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5 EQUIPMENT AND SYSTEMS LIMITATIONS AND DEGRADATION

5.1 General

5.1.1	Take account of the limitations of equipment and systems.	2		ALL
5.1.2	Respond to technical deficiencies of the operational position.	3	Notification procedures, Responsibilities	ALL

5.2 Communication equipment degradation

5.2.1	Identify that communication equipment has degraded.	3	<i>e.g. Ground-air and land line communications</i>	APP ACP APS ACS
5.2.2	Integrate contingency procedures in the event of communication equipment degradation.	4	Procedures for total or partial degradation of ground-air and land line communications, Alternative methods of transferring data	APP ACP APS ACS

5.3 Navigational equipment degradation

5.3.1	Identify when a navigational equipment failure will affect operational ability.	3	<i>e.g. VOR, Navigational aids</i>	ALL
5.3.2	Integrate contingency procedures in the event of a navigational equipment degradation.	4	<i>e.g. Vertical separation Information to aircraft, Navigational assistance, Seeking assistance from adjacent units</i>	ALL

Subject 9 : PROFESSIONAL ENVIRONMENT

The general objective is:

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

1 PROFESSIONAL ENVIRONMENT**1.1 Contributors to ATS operations**

1.1.1	Characterise civil and military ATS activities.	2	<i>Familiarisation visits to e.g. TWR, APP, ACC, AIS, RCC, Air Defence Units</i>	ALL
1.1.2	Characterise other parties interfacing with ATS operations.	2	<i>Familiarisation visits to e.g. engineering services, fire and emergency services, airline operations offices</i>	ALL

1.2 Customer Relations

1.2.1	Identify the role of ATC as a service provider and the requirements of the ATS users.	3	<i>e.g. familiarisation flights, flight simulator visits, liaison visits to aerodrome authority, aircraft and/or airfield operators</i>	ALL
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1.3 Environmental Protection

1.3.1	Describe processes used to ensure environmental protection.	2	<i>e.g. night curfews, relations with local community, relations with environmental associations, relevant administrations</i>	ALL
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Subject 10: UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

The general objective is:

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

1 UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

1.1 General

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

2 SKILLS IMPROVEMENT

2.1 Communication Effectiveness

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

2.2 Avoidance of mental overload

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

2.3 Air/Ground Cooperation

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

3 PROCEDURES FOR UNUSUAL/DEGRADED/EMERGENCY SITUATIONS

3.1 General

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

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

3.3 Unlawful Interference and Aircraft Bomb Threat

3.3.1	Apply ATC procedures associated with unlawful interference and aircraft bomb threat.	3	ICAO Doc 4444	ALL
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3.4 Strayed or Unidentified Aircraft

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

3.5 Diversions

3.5.1	Provide navigational assistance to diverting emergency aircraft.	4	Track/heading, Distance, Other navigational assistance <i>e.g. Nearest most suitable aerodrome</i>	APP ACP APS ACS
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Subject 11 : AERODROMES

The general objective is:

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

1 GENERAL**1.1 Definitions**

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

1.2 Coordination

1.2.1	Identify the information that has to be passed between Air Traffic Services (ATS) and the airport authority.	3	Airport conditions, Fire/rescue category, Condition of ground equipment and NAVAIDs, AIRAC, ICAO Annex 14	APP APS ADV ADI
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2 MOVEMENT AREA**2.1 Movement Area**

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

2.2 Manoeuvring Area

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

2.3 Runways

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

3 OBSTACLES

3.1 General

3.1.1	Explain the standards and recommendations for obstacle restrictions.	2	ICAO Annex 14, Obstacle limitation surfaces, Obstacle limitation requirements, Objects outside the obstacle limitation surfaces, Other obstacles	ADV ADI APP APS
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3.2 Obstacle Limitation Surfaces

3.2.1	Explain obstacle clearance surfaces.	2	Outer horizontal, Conical, Inner approach, Transitional, Inner transitional, Balked landing, Takeoff climb	ADI APP APS
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4 MISCELLANEOUS EQUIPMENT

4.1 Location

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