International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

Sixth North American, Central American and Caribbean Working Group (NACC/WG)
Aeronautical Information Management Implementation Task
Force Meeting (AIM/TF/6)
Mexico City, Mexico, and on-line, 21 – 24 August 2023

Agenda Item 7:   **AIM TRAINING CURRICULUM TRAINAIR PLUS SUBMISSION DOCUMENTATION CREATION**

UPDATE TO THE INITIAL AND APPROVED WP: TRAINING CURRICULUM FOR AIM PERSONNEL

(Presented by the ICAO NACC AIM TF Rapporteur)

	EXECUTIVE SUMMARY

This Working Paper follows up on the AIM TF meeting number 4held in November of 2021, regarding the Working Paper number 6 (AIM/TF/4 — WP/06), namely the **AIM 2.0 Training Requirements Official Documentation**, in order to be able to create a correct submission to ICAO's TRAINAIR PLUS division, as well as in other areas where a standardized method and curriculum can be of use for AIM Personnel.

Action:	Suggested actions are presented in Section 3
Strategic Objectives:	• Strategic Objective 2 – Air Navigation Capacity and Efficiency
References:	• AIM/TF/4 — WP/06 • AIM TF's Action Plan • Annex 15, 2, 4, 6, 14 • Doc 8126 – AIS Manual • Doc 10066 – PANS-AIM • AIM QMS • Doc 4444 – PANS-ATM • ICAO TRAINAIR Plus AIM Curriculum • Doc 8697 – Aeronautical Chart Manual • AIM Training Manual Draft • Doc 8168 – PANS-OPS

1.   Introduction

1.1   During the first Aeronautical Information Management (AIM), Flight Plan (FPL) Error Management and Air Traffic Services Inter-facility Data Communication (AIDC) Meeting (AIM/FPL/AIDC/1), held in Honduras in 2017, the Training Curriculum has been brought up for discussion

and as a request to the AIM TF to come up with a standardized method in this area for AIM Personnel, not excluding ARO and/or FPL handlers.

The Main Objectives for the AIM TF was to finalize the developed Training curriculum of the competence-based training plan. During this AIM/TF/4 meeting, the created Training Curriculum by the AIM TF was approved by all members States.

1.2   Training of AIM personnel (AIS, ARO and/or FPL personnel) is currently still lacking in various States, due to not having such standardized training plan or training curriculum in place.

1.3   Annex 15 indicates that it is necessary to identify the competencies, qualifications, skills and associated knowledge required for each AIM personnel, and to provide proper training to the personnel assigned to perform such functions, for the implementation of the AIM within the context of the established quality management system.

1.4   The Curriculum is split into the following training sections:

Module 1.
Basic Training, which serves as a basic training session on Aviation & AIM personnel functions, the related subjects, in the form of a foundation training (**Appendix**), and

Module 2.
This section includes the Skilled Training section, which is a specialized and interactive training to the AIM personnel: AIS, ARO and/or FPL personnel, once Module 1 is completed. This assures that the related AIM (Module 2A) and ARO/FPL functions (Module 2B) are properly carried out and includes an 'On-The-Job' training as well after completion of the theory part of the training.

1.5   Continuing the improvement of the AIM personnel's knowledge and skills, the Module 2 training should be followed by **CONVERSION TRAININGS**. These training types remain an active part of the continuity in training to the AIM personnel, namely: **AIM SYSTEM & SPECIALIZED TRAINING**.

1.6   This training is therefore provided to the AIM personnel when implementation of new equipment and software related to the AIM personnel's functionality (AIXM functionality, AD Mapping, eCharting, eTOD, Digital NOTAM and all other AIM, SWIM and IM platform related products etc.

1.7   As a continuous part of the AIM personnel's training, regular **REFRESHER TRAINING** is recommended as well. This includes repeated training, i.e., every 2 to 3 years, based upon knowledge and/or performance gaps noticed by the AIM task executions. This form part of the QMS for AIM as well.

2.   Achieving the AIM Approved Training Curriculum

2.1   Competence-based training and assessment presented in the Training Curriculum are based on a systematic approach whereby competencies and their performance criteria are defined, i.e., by identifying the needed competencies.

2.2   When determining the scope and depth of the Knowledge, Skills and Abilities (KSA) requirements of AIM and ARO/FPL personnel, it was necessary to analyse the duties and tasks required of them, in balance with all the ongoing developments.

2.3   In general terms the competence-based training and assessment principles are as follow:

- Clear definition of relevant competencies.
- Common understanding of competence requirements.
- Competencies can be consistently taught, observed and assessed in a broad range of contexts.
- The training provider establishes clear performance criteria to assess competence.
- Evidence of competent performance is valid and reliable.
- Connection between competencies and training, required performance and assessment.

2.4   To meet the mentioned requirements above, the State's AIM personnel can be divided into various functional areas of responsibility, such as i.e.:

- Aeronautical Information Services Office
- Aerodrome Unit, ARO/ FPL Office
- International NOTAM Office (NOF)
- Database Unit
- Publications/Editing/Text producing Unit
- Aeronautical Cartographic Unit
- Other etc.

2.5   Where pre-flight and post-flight services or AIM product services are combined with the ATS Reporting Office (ARO) or FPL Unit and a number of additional AIM functions may be applicable. As described by Annex 15, the ARO is considered as part of AIM.

2.6   The transition from AIS to AIM, the Amendments to Annexes 15 and 4, Docs 8126 and 8697, likewise the creation of new documents as QMS Doc 9839, AIM Training Manual and PANS AIM Doc 10066, all contribute to the fact that a standardized training is of high necessity, in order to ensure uniformity within AIM within the region, as well as to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system's safety, regularity, economy and efficiency in an environmentally sustainable manner.

2.7   Training and assessment in AIM are characterized by performance orientation, emphasis on standards of performance and their measurement, as well as the development of training to the specified performance standards under a Competency Based Approach (CBA). The principle for this approach uses performance as the measurement to identify the opportunity for competency-based training and how it can address gaps in performance identifying the Competency attributes required to perform the AIM job: **Knowledge, Skills and Abilities** (KSA)

2.8   The Secretariat emphasized on the development of competency-based training and assessment is based on a systematic approach whereby KSA and their standards are defined, and Performance is measured against the standards.

2.9 The following is the summarized interpretation of the Approved (by the AIM TF) **Training Module Curriculum**:

a. **BASIC TRAINING ALL AIM STAFF – MODULE 1**
   - Duration: 1 – 4 weeks (excluding exam period).
   - Progress tests are recommended at the end of each subject and an exam at the end of each module with a 70% pass rate.
   - Briefing on the subjects in the form of basis training, in order for personnel to properly be introduced to AIM and ARO/FPL.
   - Provide Basic training upon entry as an employee in the AIM and/or ARO/FPL unit. Subjects to be received are based upon the recommended list below, which include all or part of the following:
     - AVIATION LEGISLATION
     - PRINCIPLES OF AIR TRAFFIC MANAGEMENT
     - AERODROMES
     - AIRCRAFT
     - METEOROLOGY
     - NAVIGATION
     - QUALITY MANAGEMENT SYSTEMS
     - SAFETY MANAGEMENT SYSTEMS
     - HUMAN PERFORMANCE
     - EQUIPMENT AND SYSTEMS
     - CHARTING / CARTOGRAPHY
     - AIRSPACE

b. **SKILLED TRAINING – MODULE 2A AIS PERSONNEL**
   - Duration: 3 – 4 weeks theory (excluding exam period).
   - OTJ between 2 to 6 weeks, depending on the employee's progress.
   - Progress tests are recommended at the end of each subject and an exam at the end of each module with a 70% pass rate.
   - Specialized & Interactive training in order to properly carry out the AIM function.
   - Provide skilled training upon successful completion of Module 1. Subjects to be received are based upon the recommended list below, which include all or part of the following:

- ▪ THE AERONAUTICAL INFORMATION SERVICES
- ▪ AERODROME AIS UNITS
- ▪ GENERAL DATA MANAGEMENT
- ▪ STATIC DATA
- ▪ DYNAMIC DATA
- ▪ PUBLICATIONS
- ▪ CHARTING
- ▪ AIS FUNCTIONS
- ▪ COORDINATION

c. **SKILLED TRAINING – MODULE 2B ARO / FPL PERSONNEL**
- Duration: 2 – 4 weeks theory (excluding exam period).
- OTJ between 2 to 4 weeks, depending on the employee's progress.
- Progress tests are recommended at the end of each subject and an exam at the end of each module with a 70% pass rate.
- Specialized & Interactive training in order to properly carry out the AIM function.
- Provide skilled training upon successful completion of Module 1. Subjects to be received are based upon the recommended list below, which include all or part of the following:
  - ▪ THE AERONAUTICAL INFORMATION SERVICES
  - ▪ ARO and AERODROME AIS UNITS
  - ▪ DYNAMIC DATA
  - ▪ CHARTING / CARTOGRAPHY
  - ▪ ARO FUNCTIONS
  - ▪ COORDINATION

d. **CONVERTION TRAINING – AIM STAFF**
- Duration: depends on training given by vendor, related to the implemented new/changed/updated system or application
- May/can include or excluding exams
- May include OTJ
- Specialized & Interactive training in order to properly carry out the AIM function.

e. **REFRESHER TRAINING AIM STAFF**
- A refresher course is a training/workshop course in which the employees improve their knowledge or skills and learn about new developments that are relevant and/or related to the functions they carry out.
- Duration: 1 – 2 weeks theory (no exams/assessment required).
- Annual or at least every two years.
- Based on an analyses carried out on the employee by the State/Unit in order to inquire which needed subjects are to be refreshed in, and in addition conversion training refreshing with regards to the carried out tasks and functionalities.
- Interactive workshop/training in order to properly carry out the AIM and/or ARO / FPL function.
- Recommendation is at an interval of 2 to 3 years.

Note: Both modules 2A and 2B can be combined, depending on the setup of the State's AIM and/or ARO/FPL unit!

3.   **Suggested actions**

3.1.   The ICAO NACC AIM TF is invited to:

a)   assure that this approved Training Curriculum, gets presented to the correct institutions and Secretariat for proper realization for the Region for compliance to this AIM Training Curriculum for their AIM personnel; and

b)   have this AIM Training Curriculum submitted to ICAO's TRAINAIR PLUS

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Module 1: Basic Training

This Module 1' subjects are not optional. All AIM / ARO or FPL personnel shall receivce this basic training.

#	Subject / Topic		Recommended References	Compliancy Reference

1. AVIATION LEGISLATION

The general objectives are to enable students to:
Appreciate the development and application of Aviation Legislation;
Recognize the Rules of the Air and regulations governing airspace.

1.1 Overview of aviation legislation				
1.1.1	State the necessity for Air Law.	1	Standardization; harmonization.	
1.1.2	Name the key National & International aviation organizations.	1	ICAO, National Supervisory Authority (CAA)	
1.1.3	Describe the impact these organizations have on Air Navigation Services and air traffic operations and their interaction with each other.	2	Regulatory process.	

1.2 International organizations				
1.2.1	Explain the purpose, organization and function of ICAO.	2	ICAO Convention, ICAO Council, Air Navigation Commission (ANC), ICAO Regional Offices.	
1.2.2	Describe the methods by which ICAO notifies and implements legislation.	2	Annexes, SARPS, PANS, SUPPS, Documents	
1.2.3	Describe the purpose and function of other international agencies and their relevance to Air Navigation Services and Air Traffic Operations.	2		
1.2.4	Be aware of the various international controller, pilot, airline operator and airspace user associations.	0	IFATCA, IFALPA, IATA, IAOPA, IACA, ACI, CANSO, COSESNA....etc.	

1.3 National organizations				
1.3.1	State the National Organizations responsible for the regulation of aviation and their relevance to Air Navigation Services and Air Traffic Operations.	1	National / State Supervisory Authorities, Government Authorities, Military Authorities.	
1.3.2	State the relationship between service providers and regulators.	1	ANSP, CAA.	
1.3.3	State the methods by which legislation is implemented and notified.	1	National / State legislation, Air Law.	
1.3.4	Specify the organisation of the National Supervisory Authority.	1	National / State Supervisory Authority.	
1.3.5	Describe how the body carries out its regulation responsibilities.	2	National / State legislation, audits and inspections.	
1.3.6	Be aware of the various national controller, pilot, airline operator and airspace user associations.	0		

1.4 Financing Air Navigation Services				
1.4.1	Be aware of the cost of air navigation services	0		
1.4.2	Describe the principle of route charges.	2	Aviation Regulation	
1.4.3	Describe the principle of local charges.	2	e.g. ATC charges, Navigation charges, APP charges, DEP charges.	National / State AIP and/or AIC
1.4.4	Be aware of charges for AIS publications.	0	e.g. AIP, charts, etc.	National / State AIP and/or AIC
1.4.5	Be aware of charges for webbased products.	0	e.g. Home briefing.	National / State AIP and/or AIC

1.5 Airspace				
1.5.1	List the different types of airspace.	1	Control zones, control areas, airways, upper and lower airspace, FIR, TMA, ATZ.	ICAO Annex11
1.5.2	Explain the function of each type of airspace.	2	FIR, CTR, TMA, etc.	ICAO Annex 11
1.5.3	Explain how airspace is applied nationally.	2	FIR, CTR, TMA, etc.	National / State AIP
1.5.4	List the ICAO airspace classes.	1	Classes A-G.	ICAO Annex 11
1.5.5	Explain the differences between the airspace classes.	2	Classes A-G.	ICAO Annex 11
1.5.6	Explain the national application.	2	Classes A-G.	National / State AIP

1.6 Rules of the Air				
1.6.1	State the categories of International Rules of the Air.	1	General, visual, instrument.	ICAO Annex 2
1.6.2	Be aware of the influence of relevant general flight rules on ATM.	0	e.g. Applying separation.	ICAO Annex 2
1.6.3	Explain those rules of the air that have most relevance to AIS.	2	Applicability, protection of persons and property, flight plans, time, VFR, IFR.	ICAO Annex 2
1.6.4	Differentiate between flying in accordance with visual and instrument flight rules (VFR and IFR).	2		ICAO Annex 2
	2		ICAO Annex 2	
1.6.5	Be aware of any notified national differences with ICAO.	0		National / State AIP; GEN 1.7; ICAO Annexes

2. PRINCIPLES OF AIR TRAFFIC MANAGEMENT

The general objectives are to enable students to:
Understand the basic operational procedures used by the air traffic control service in providing separation to aircraft;
Be aware of the necessity for ATC to apply these procedures to ensure a safe and expeditious service to airspace users.

	2.1 Organisation of Air Traffic Management			
2.1.1	List the types of Air Navigation Services.	1	Definitions: ATM (ATS, TFM/ATFCM, ASM), AIS, MET,	ICAO Doc 9713; ICAO Annex 11; ICAO Annex 15;
2.1.2	State the objectives of the Air Traffic Services.	1	ATC, Advisory Service, FIS, ALRS.	ICAO Annex 11
2.1.3	List the types of Air Traffic Services.	1	ATC, Advisory Service, FIS, ALRS.	ICAO Annex 11
2.1.4	Define ATC Service.	1		ICAO Annex
2.1.5	Explain specific areas of responsibility of ATC Services.	2	Area Control, Approach Control, Aerodrome Control.	ICAO Annex 11
2.1.6	Be aware of different types of control services.	0	Radar, non-radar.	
2.1.7	Define Flight Information Service.	1		ICAO Annex 11
2.1.8	State the information that shall be passed to aircraft by a controller.	1		ICAO Annex 11
2.1.9	Define Alerting Service.	1		ICAO Annex 11
2.1.10	Describe the phases of emergency.	2	Uncertainty, alert, distress phase.	ICAO Annex 11
2.1.11	Describe the organisation, responsibilities and structure of Rescue Co-ordination Centres.	2	National / State AIP, National / State RCC.	
2.1.12	State the purpose of ATFM/ATFCM.	1	Flow management.	ICAO Annex 11; ICAO Doc 4444
2.1.13	State the purpose of ASM.	1	Flexible use of airspace (FUA).	ICAO Doc 4444

	2.2 Air-ground communications			
2.2.1	State the different methods of airground communications.	1	Radiotelephony, ADS-B, Mode S, ACARS, CPDLC, SELCAL, etc.	ICAO Doc 4444 ICAO Annex 11
2.2.2	Be aware of the need for standard ICAO phraseology.	0		ICAO Annex 10; ICAO Doc 4444
2.2.3	Be aware of the ICAO phonetic alphabet and expressions for numerals and time.	0		ICAO Annex 10

	2.3 Flight data processing			
2.3.1	State the need for Flight Data Processing.	1		ICAO Doc 4444
2.3.2	List the stages of the flight plan process.	1	FPL+estimate+clearance.	ICAO Doc 4444
2.3.3	Specify the methods of exchange of estimates.	1	Telephone.	ICAO Doc 4444

	2.4 ATC clearances and instructions			
2.4.1	Define ATC Clearance.	1		ICAO Annex 11
2.4.2	State the contents of an ATC clearance.	1		ICAO Annex 11
2.4.3	Define ATC Instructions.	1		ICAO Doc 4444
2.4.4	State the contents of an ATC Instruction.	1		ICAO Doc 4444

	2.5 Co-ordination between controllers			
2.5.1	Be aware of the necessity of coordination.	0	Safe conduct of flight.	ICAO Annex 11
2.5.2	Describe the principles of coordination.	2	Negotiation, notification, agreement.	
2.5.3	State methods of co-ordination.	1	Data link, Telephone, Intercom, Voice, etc.	ICAO Annex 11

	2.6 Altimetry and level allocation			
2.6.1	Explain the relationship between flight level, height and altitude.	2	QNH, QFE, Standard Pressure Setting.	ICAO Doc 4444
2.6.2	Define transition level, transition altitude and transition layer.	1		ICAO Doc 8168
2.6.3	Be aware of the consequences of the variability of the transition Level.	0	Broadcast of Transition Level.	ICAO Doc 4444
2.6.4	State the cruising level allocation system.	1	Table of cruising levels.	ICAO Annex 2
2.6.5	Describe the factors that determine lowest useable flight level.	2		ICAO Doc 4444 ICAO Doc 8168
2.6.6	Describe the concept of RVSM.	2	Table of cruising levels.	ICAO Annex 2;

	2.7 Principles of separation			
2.7.1	State the vertical separation minima.	1	Vertical separation minima (500, 1000 and 2000 ft).	ICAO Doc 4444
2.7.2	Describe the use of vertical separation.	2	Vertical separation minima as per Flight Level Allocation, Use of Mode C and Mode S derived information.	ICAO Doc 4444
2.7.3	Be aware of longitudinal separation based on time and distance.	0	Longitudinal separations.	ICAO Doc 4444; RNAV
2.7.4	Be aware of the use of lateral separation.	0	Lateral separations.	ICAO Doc 4444
2.7.5	State the general radar separation minima.	1	Radar separation (3NM, 5NM, 10NM).	ICAO Doc 4444
2.7.6	Be aware of the influence of wake turbulence on separation.	0	Aircraft spacing – time/distance/altitude.	ICAO Doc 4444

2.8 Collision avoidance			
2.8.1	State the working principle of the available airborne collision avoidance systems.	1	ACAS, TCAS.	ICAO Doc 8168
2.8.2	State the working principle of the available ground based collision avoidance systems.	1	MTCA, STCA.	

2.9 Data displays				
2.9.1	Explain the purpose of the controller's flight progress display.	2	Flight Progress Strips, Electronic Data Display.	ICAO Doc 4444
2.9.2	List the pertinent data to be extracted from a flight plan to produce a flight progress display.	1		ICAO Doc 4444
2.9.3	State the pertinent data from other sources to produce a flight progress display.	1	Pilot Reports, Controller Coordination, Data Exchange.	ICAO Doc 4444
2.9.4	Describe how a controller updates the data display to accurately reflect the traffic situation.	2	Strip display update procedures.	

2.10 Air Traffic Flow and Capacity Management (ATFM)			
2.10.1	Define air traffic flow management/air traffic flow and capacity management.	1		ICAO Doc 4444
2.10.2	Be aware of the need for ATS system capacity management.	0		ICAO Doc 4444
2.10.3	List the main factors influencing ATS capacity.	1		ICAO Doc 4444

2.11 Airspace Management (ASM)			
2.11.1	State the need for airspace management.	1		ICAO Annex 2; ICAO Annex 11;
2.11.2	Explain the need for Flexible Use of Airspace (FUA).	2		ICAO Doc 4444;
2.10.3.	State the responsibilities for airspace	1		

3. AERODROMES

The general objectives are to enable students to:
Be familiar with the layout of an aerodrome;
Describe aerodrome marking and lighting systems.

3.1 Aerodrome layout			
3.1.1	Define "aerodrome".	1		ICAO Annex 14
3.1.2	Differentiate aerodrome areas.	2	Movement and manoeuvring areas.	ICAO Annex 14
3.1.3	Identify the parts of the manoeuvring area.	1	Runways and taxiways.	
3.1.4	Be aware of the terms airside/landside.	0	The movement area of an airport, adjacent terrain and buildings or portions thereof, access to which is controlled.	ICAO Annex 17

3.2 Runways			
3.2.1	Define "runway".	1		ICAO Annex 14
3.2.2	List the elements of a runway.	1	Threshold, end, TDZ, etc.	ICAO Annex 14
3.2.3	Describe the physical characteristics of a runway.	2		ICAO Annex 15; ICAO Annex 14
3.2.4	Define "runway shoulder".	1		ICAO Annex 14
3.2.5	State the characteristics of runway shoulders.	1		ICAO Annex 14
3.2.6	Define "runway strip".	1		ICAO Annex 14
3.2.7	State the dimensions of a runway strip.	1		ICAO Annex 14
3.2.8	Define "RESA" (Runway End Safety Area).	1		ICAO Annex 14
3.2.9	State the dimensions of a RESA.			ICAO Annex 14
3.2.10	Explain the purpose of aerodrome marking and lighting systems.	2	Visual guidance to pilots.	ICAO Annex 14
3.2.11	Describe runway markings.	2	RW Y designation, centre line, threshold, fixed distance, TDZ.	ICAO Annex 14
3.2.12	Describe runway lighting systems.	2	Runway, threshold identification, edge, end, centre line, touchdown zone and SW Y.	
3.2.13	Define "clearway".	1		ICAO Annex 14
3.2.14	State the dimensions of a clearway.	1		ICAO Annex 14
3.2.15	Define "stopway".	1		ICAO Annex 14
3.2.16	State the dimensions of a stopway.	1		ICAO Annex 14

3.3 Taxiways			
3.3.1	Define "taxiway".	1		ICAO Annex 14
3.3.2	Describe the main characteristics of taxiways.	2	Rapid exit, taxiway shoulders, etc.	ICAO Annex 14
3.3.3	State the dimensions of a taxiway.	1		ICAO Annex 14
3.3.4	Describe taxiway markings.	2	Centre line, taxi holding point and taxiway intersection.	ICAO Annex 14
3.3.5	Describe taxiway lighting.	2	Centre line, edge lights and stop bars.	ICAO Annex 14

	3.4 Aprons			
3.4.1	Define "apron".	1		ICAO Annex 14
3.4.2	List the elements of an apron.	1	Apron taxiway, aircraft stand,aircraft stand taxi lane.	ICAO Annex 14
3.4.3	Describe the main characteristics of an apron.	2		ICAO Annex 14
3.4.4	Be aware of visual docking/parking guidance systems.	0		ICAO Annex 14

	3.5 Landing aids			
3.5.1	List visual landing aids.	1	VASIS, PAPI and APAPI.	ICAO Annex 14
3.5.2	Describe visual landing aids.	2	VASIS, PAPI and APAPI.	ICAO Annex 14
3.5.3	List approach lighting systems.	1	Simple, precision and Category I, II and III systems, CALVERT.	ICAO Annex 14
3.5.4	Describe approach lighting systems.	2	Simple, precision and Category I, II and III systems, CALVERT.	ICAO Annex 14
3.5.5	Be aware of the effect of partial/total unserviceability of landing aids on aircraft operations.	0	Airport operations minima.	ICAO Annex 14; ICAO Annex; ICAO Doc 8168
3.5.6	State the function of the signal area.	1		ICAO Annex 14
3.5.7	Describe a wind direction indicator.	2	e.g. W ind sock (description, position, relative wind speed indication).	ICAO Annex 14

	3.6 Services / Facilities			
3.6.1	List the different services found at an airport.	1	Fuel, de-icing, customs, fire fighting service, security, maintenance, etc.	ICAO Annex 9
3.6.2	Be aware of the impact of the degradation of services on airport operations.	0	Fuel, de-icing, customs, fire fighting service, security, etc.	ICAO Annex 9
3.6.3	Identify the information that has to be passed between aeronautical information services (AIS) and the airport authorities.	1	Aerodrome conditions, fire/rescue category, condition of ground equipment and NAVAIDs.	ICAO Annex 14

	3.7 Obstacles			
3.7.1	Define "obstacle".	1		ICAO Annex 14
3.7.2	Describe how obstacles are identified.	2		ICAO Annex 14
3.7.3	List the obstacle limitation surfaces.	1		ICAO Annex 14
3.7.4	Explain the purpose of obstacle limitation surfaces.	2		ICAO Annex 14
3.7.5	State the obstacle limitation requirements.	1		ICAO Annex 14
3.7.6	Describe the marking of unusable or unserviceable areas on the movement area.	2	Closed runways/taxiways, apron.	ICAO Annex 14

	3.8 Aerodrome data			
3.8.1	List significant elements of aerodrome data.	1	Aerodrome reference point, Aerodrome reference temperature, Aerodrome dimensions, strength of pavements, declared distances, rescue and fire fighting, etc.	ICAO Annex 14
3.8.2	Define "Aerodrome Reference Point" (ARP).	1		ICAO Annex 14
3.8..3	Explain the significance of the ARP.	2		ICAO Annex 14
3.8.4	Define "aerodrome elevation".	1		ICAO Annex 14
3.8.5	Explain the significance of the aerodrome elevation.	2		ICAO Annex 14
3.8.6	Define "runway elevation".	1		ICAO Annex 14
3.8.7	Explain the significance of the runway elevation.	2		ICAO Annex 14
3.8.8	Define "threshold elevation".	1		ICAO Annex 14
3.8.9	Explain the significance of threshold elevation.	2		ICAO Annex 14
3.8.10	Define "strength of pavements".	1	PCN/ACN.	ICAO Annex 14
3.8.11	Explain the significance of the strength of pavements.	2		ICAO Annex 14
3.8.12	Define the terms TORA, TODA, ASDA and LDA.	1		ICAO Annex 14
3.8.13	Explain the significance of these distances.	2		ICAO Annex 14

	3.9 Heliports			
3.9.1	Define"heliport".	1		ICAO Annex 14
3.9.2	List the physical characteristics of a heliport.	1	Final approach and take-off areas (FATO), helicopter clearways, touchdown and lift-off areas, safety areas, helicopter ground taxiways, helicopter air taxiways, etc.	ICAO Annex 14
	Recognise the different visual aids at a heliport.	1	Wind direction indicators, markings and markers, lights, etc.	ICAO Annex 14

4. AIRCRAFT

The general objectives are to enable students to:
Understand the basic principles of the theory of flight;
Be familiar with factors affecting aircraft performance.

	4.1 Principles of flight			
4.1.1	Describe the forces acting on an aircraft in flight.	2	Lift, thrust, drag, weight.	
4.1.2	List the factors affecting these forces.	1	Streamline airflow, airfoil, angle of attack.	
4.1.3	List the main structural components of an aircraft.	1	Wings, tail plane, fuselage, flaps, elevator, rudder.	
4.1.4	Describe how the control surfaces influence the movements of an aircraft.	2	Flaps, elevator, rudder.	
4.1.5	Identify the critical factors that affect aircraft performance.	1	Maximum speed, stall speed, ceiling, streamline flow, turbulent flow.	

	4.2 Aircraft propulsion			
4.2.1	Explain the operating principles, of the piston engine and propeller.	2	Piston engines, fixed pitch, variable pitch, number of blades	
4.2.2	List the advantages and disadvantages of piston engines.	1	Quick reaction, cost effective, short runway operations – less power at high altitude, slow, high maintenance, unfavourable power/weight ratio.	
4.2.3	List the different types of gas turbines.	1	Straight jet, turbofan, afterburner.	
4.2.4	Explain the operating principles of turbine engines.	2	Inlet compression, combustion, exhaust.	
4.2.5	List the advantages and disadvantages of turbine engines.	1	Efficient at high level, very powerful, high speed, reliable – expensive.	
4.2.6	Explain the operating principles of turbo-prop propulsion.	2		
4.2.7	List the advantages and disadvantages of turbo prop propulsion.	1	Efficient at medium altitudes, short runway operations, fast and economical – older types are slow, less efficient, noise and vibrations.	

	4.3 Factors affecting aircraft performance			
4.3.1	Be familiar with the factors affecting aircraft on take-off.	0	Runway characteristics and conditions, wind, temperature and aircraft weight.	
4.3.2	Be familiar with the factors affecting aircraft during climb.	0	Speed, weight, altitude, wind and temperature.	
4.2.3	Be familiar with the factors affecting aircraft at cruise.		Altitude, cruising speed, wind, effect of weight and air density on ceiling, cruising systems, i.e. LRC, cost index.	
4.3.4	Be familiar with the factors affecting aircraft during descent.	0	Wind, speed, rate of descent, aircraft configuration and pressurisation.	
4.3.5	Be familiar with the factors affecting aircraft during final approach and landing.	0	Wind, aircraft configuration, weight, meteorological and runway onditions.	
4.3.6	Be familiar with the factors affecting aircraft during missed approach and holding.	0	Flap setting, power setting, speeds.	
4.3.7	Be familiar with performance restrictions due to ecological constraints.	0	Fuel dumping, noise abatement procedures.	

	4.4 Flight instruments			
4.4.1	List the basic flight instruments for VFR flights.	1	Magnetic compass, timepiece, pressure altimeter, airspeed indicator, etc.	ICAO Annex 6
4.4.2	List the additional flight instruments for IFR flights.	1	Turn and slip indicator, artificial horizon, directional gyroscope, rate of climb/descent, etc.	ICAO Annex 6
4.4.3	List the basic onboard navigation instruments.	1	To include: ADF, VOR (TACAN), DME, ILS, MLS, GNSS, INS, IRS.	
4.4.4	Be familiar with vital engine monitoring parameters.	0	Oil pressure and temperature, engine temperature, rpm, fuel state and flow, EGT, vibration, etc.	
4.4.5	Be familiar with the use of other cockpit instruments.	0	e.g. TCAS, Transponder mode CS, Head up display, (E)GPW S/TAW S, Wind Shear Indicator, W eather Radar, Autopilot, FMS, EFIS.	ICAO Annex 10

	4.5 Types and categories of aircraft			
4.5.1	List the different groups of aircraft.	1	Fixed wing, rotary wing, balloons, gliders, etc.	
4.5.2	State the wake-turbulence categories.	1	ICAO categories, national categories.	*Note: reference to FPL items*
4.5.3	Identify the most common types of aircraft in operational use.	1	Especially the most common local aircraft typical to the state/region.	*Note: reference to FPL items*
4.5.4	State the ICAO aircraft type designators and categories.	1	The most common local aircraft typical to the state/region.	ICAO Doc 8643

5. METEOROLOGY

The general objectives are to enable students to:
Understand the basics of meteorology;
Appreciate how meteorological phenomena affect airline operations and aircraft performance.

	5.1 Influence of meteorology on aviation			
5.1.1	Explain the relevance of meteorology to aviation.	2		ICAO Annex 3

	5.2 Atmosphere			
5.2.1	State the composition and structure of the atmosphere.	1	Gases, layers.	
5.2.2	Describe the main elements of the International Standard Atmosphere (ISA).	2	Temperature, pressure and density.	ICAO Doc 7488; ICAO Annex 8
5.2.3	State the reasons why the ISA has been defined.	1	Standardisation, reference data.	
5.2.4	Describe the characteristics of different types of air masses and their origin.	2	Polar, arctic, tropical, continental, maritime.	
5.2.5	Describe the major wind systems.	2	Polar east winds, west wind zone, trade winds, inner-tropical convergence zone.	
5.2.6	Describe high and low pressure systems.	2	Cyclones and anticyclones, ridges troughs.	
5.2.7	Describe the different types of fronts and the weather associated with them.	2	Fronts, warm, cold, occluded, squalls.	
5.2.8	Describe tropical meteorology	2	Storm, depression, hurricane,	

	5.3 Atmospheric processes			
5.3.1	Explain the processes by which heat is transferred and how the atmosphere is heated.	2	Radiation, convection, advection, conduction, turbulence.	
5.3.2	Describe temperature variation.	2	Lapse rates, land/sea variations, diurnal variation, inversion, freezing level.	
5.3.3	Differentiate between the different terms relating to air saturation levels.	2	Saturation, condensation, evaporation, relative humidity, dew point, sublimation, latent heat, spread super-cooled water.	ICAO Annex 3; ICAO Doc 8896
5.3.4	Explain the measurement of air pressure.	2	Barometer, hPa.	ICAO Annex 3; ICAO Doc 8896
5.3.5	Describe the relationship between pressure, temperature and height.	2	Boyle's Law, influence of changing density on engine performance.	
5.3.6	Define the various Pressure Data.	1	QFE, QNH, Standard Pressure Setting, altitude, height, flight level.	

	5.4 Meteorological phenomena			
5.4.1	Explain the different conditions necessary for the formation of clouds.	2	Saturation level, instability, adiabatic lifting processes.	
5.4.2	Explain how clouds are formed.	2	Advection, orographic lift, convection, rising along a warm front.	
5.4.3	Identify different cloud types and state their characteristics.	1	Stratus, Cumulus, etc.	
5.4.4	State how the amount of cloud is measured.	1	Okta, FEW , SCT, BKN, OVC, SKC.	ICAO Annex 3; ICAO Doc 8896
5.4.5	Explain the significance of precipitation in aviation.	2	Runway Conditions, icing.	
5.4.6	Describe all types of precipitation.	2	Rain, snow, sleet, hail, etc.	ICAO Doc 9328
5.4.7	Explain the causes of atmospheric obscurity.	2	Advection fog, radiation fog, mixing, evaporation, mist, drizzle, haze.	ICAO Doc 9328
5.4.8	State how visibility is measured.	1	Human eye, transmissometer.	ICAO Annex 3; ICAO Doc 8896; ICAO Doc 9328
5.4.9	Explain different types of visibility.	2	Meteorological visibility, RVR, slant visibility, prevailing visibility, flight visibility.	ICAO Doc 9328
5.4.10	Explain the different types of wind phenomena and their significance to aviation.	2	Veering, backing, gusting, jet streams, land/sea breezes, mountain/valley breezes, Föhn, surface wind, upper winds, Coriolis force.	
5.4.11	State how wind is measured.	1	Anemometer.	ICAO Annex 3; ICAO Doc 8896
5.4.12	List the significant meteorological phenomena hazardous to flight.	1	Turbulence, thunderstorms, icing, wind shear, micro bursts, wake turbulence, hail, CAT, freezing precipitation	
5.4.13	Describe their origins and impact on flight operations.	2		

	5.5 Organisation of meteorological services			
5.5.1	Name the basic duties, organisation and working methods of MET offices.	1	Collating MET reports and making forecasts, drawing weather charts.	ICAO Annex 3; ICAO Doc 8896; AIP GEN 1.1.2, 3.5 , AD 2.11 and 3.11
5.5.2	Be aware of the international and national standards for the exchange of meteorological data.	0		ICAO Annex 3; ICAO Doc 8896
5.5.3	Specify methods of collection and recovery of meteorological data.	1	Barometer, thermometer, ceilometers, anemometer, weather balloons, transmissometer, radar, satellites.	ICAO Annex 3

	5.6 Meteorological information			
5.6.1	List the most common types of weather reports and forecasts.	1	METAR, SPECI, TAF, SIGMET, AIRMET, GAMET.	ICAO Annex 3; ICAO Doc 8896
5.6.2	Explain the contents of weather reports and forecasts.	2	Wind, visibility, clouds, temperature/dew point, pressure.	
5.6.3	List the most common types of weather charts.	1	Low level charts, High level charts significant weather charts.	ICAO Annex 3; ICAO Doc 8896
5.6.4	List the information depicted on the most commonly used weather charts.	1	Isobars, icing, turbulence, clouds, fronts, jet streams, temperature, wind signatures, etc.	

6. NAVIGATION

The general objective is to enable students to:
Understand the basic principles of navigation and air navigation systems.

	6.1 Introduction			
6.1.1	Explain the need for navigation in aviation.	2	Most economic route, safety, accuracy.	
6.1.2	Be aware of navigation methods used in aviation.	0	e.g. Historical overview, celestial, on-board, radio, satellites, navigation systems.	

	6.2 The Earth			
6.2.1	Describe the physical characteristics of the Earth.	2	Shape, size, rotation, revolution in space	
6.2.2	State the different temporal reference systems used in aviation.	1	Gregorian calendar, UTC, 24-hour local mean time, daylight saving time, time zones, dateline, atomic clocks, units of time measurement, beginning of the day – 0000, end of the day - 2359, SR and SS.	ICAO Annex 2; ICAO Annex 5; National / State AIP
6.2.3	Differentiate between UTC and local mean time.	2		National / State AIP GEN 2
6.2.4	List commonly used reference points/lines on the Earth's surface.	1	Meridians, parallels, equator, poles.	
6.2.5	Explain direction and distance on the earth.	2	(Units of measurement) Cardinal and inter-cardinal points, great circle, small circle, thumb lines, etc.	
6.2.6	Describe how a position on the Earth's surface is determined.	2	Latitude and longitude, units of measurement (degrees, minutes, seconds, NM, KM).	
6.2.7	Identify the general principles of horizontal reference system.	1	WGS-84 (World Geodetic System -1984).	ICAO Annex 4; ICAO Annex 11; ICAO Annex 15; ICAO Doc 9674
6.2.8	Identify the general principles of vertical reference system.	1	Mean sea level datum, Earth Gravitational Model 1996 (EGM – 96), local geoid models.	ICAO Annex 4; ICAO Annex 15; ICAO Doc 9674
6.2.9	Explain the general relationship between the Earth's magnetic field and the compass.	2	Magnetic variation, deviation, inclination, isogonals.	
6.2.10	Differentiate between the three north designations.	2	True north, magnetic north and compass north.	

	6.3 Projections			
6.3.1	Describe how the Earth is projected as a map.	2	Principle and types of projection	
6.3.2	Describe the properties of an ideal map.	2	Conformality, constant scale, true azimuth, distance, topography, accuracy.	
6.3.3	Explain the properties and uses of different projections.	2	Conformal Lambert, Mercator, Polar stereographic, middle latitude chart.	

	6.4 Applied navigation			
6.4.1	Explain how to measure the distance between two points.	2	Co-ordinates/points, ruler, protractor, computer, calculator (NM and minutes of a meridian).	
6.4.2	List types of aircraft speed.	1	True airspeed (Mach number), Indicated airspeed, Ground speed (knots, KM/h).	
6.4.3	Differentiate between air speeds.	2	True airspeed, Indicated airspeed.	
6.4.4	Explain the influence of wind on the flight path.	2	Heading, track, drift angle, wind correction angle, wind vector, flying time.	

	6.5 Navigation aids			
6.5.1	List the most common ground based aids to navigation.	1	NDB, VOR, DVOR, TACAN, DME, ILS & marker beacons, MLS, LORAN-C.	
6.5.2	Explain the working principles of ground based systems.	2	NDB, VOR, DVOR, TACAN, DME, ILS & marker beacons, MLS.	
6.5.3	Describe the use, precision and limitations of ground based systems.	2	NDB, VOR, DVOR, TACAN, DME, ILS and marker beacons, MLS, coverage and range.	
6.5.4	Identify the cockpit instrument/displays of ground based systems.	1	Analogue/multifunction displays (ADF, VOR, TACAN, DME, ILS and marker Beacons, MLS).	
6.5.5	Be aware of the working principles of VDF.	0	VDF used with or without RADAR (controller's side) DRDF (Ref. 2.5.1 radio direction finding)	
6.5.6	Be aware of the use of on-board systems.	0	INS, IRS, FMS and navigational computers (area navigation) BRNAV, P-RNAV, EFIS (Electronic Flight Instrument System).	ICAO Doc 8168
6.5.7	Be aware of the use of satellite based navigational systems.	0	GNSS, ADS-B and C (Station olding).	ICAO Doc 8168

7. QUALITY MANAGEMENT SYSTEMS

The general objectives are to enable students to:
Understand the basic principles of quality management systems;
Being aware of the importance of quality management systems in air navigation services; Describe the company's quality management system;
Apply pre-defined AIS processes within the quality management system.

	7.1 Introduction			
7.1.1	Define quality.	1		ICAO Annex 15; www.iso.org; ISO 8402
7.1.2	Describe a process.	2		www.iso.org
7.1.3	Explain the need for quality management	2		
7.1.4	Define a quality management system.	1		
7.1.5	List the benefits of a quality management system.	1		

	7.2 ISO (International Standards Organisation)			
7.2.1	State the objectives of ISO.	1		www.iso.org
7.2.2	Describe ISO 9000 series.	2		
7.2.3	Describe how ISO 9000 works.	2		www.iso.org
7.2.4	Explain the need for audits.	2	External, internal.	
7.2.5	Describe the certification process.	2		
7.2.6	State the importance of certification for ANSPs.	1		

	7.3 Key Performance Indicators (KPI)			
7.3.1	State company quality objectives.	1	e.g. Referring to core activities.	
7.3.2	Describe the role of a KPI.	2	Monitoring and continuous improvement.	
7.3.3	List AIS KPIs.	1	e.g. Customer satisfaction index, cost-effectiveness of AIS, staff capability, staff continuity, external co- ordination, re-work level, time spent on the product, security, traceability, user enquiries, availability, timeliness.	
7.3.4	Describe the most important KPIs for AIS customers.	2	Timeliness of data, user enquiries, traceability.	
7.3.5	Describe the most important KPIs for AIS organizations	2	Customer satisfaction index, rework level	

	7.4 ICAO and Requirements			
7.4.1	Explain the need to control the quality of data.	2	Accuracy, integrity and relevance of data, user requirements.	ICAO Annex 15
7.4.2	State the ICAO quality system requirements.	1		ICAO Annex 15
7.4.3	Describe the requirements for AIS data/ information quality management.	2		Strategic ICAO Annex 15 PANS AIM Doc 10066 73/2010

	7.5 Company Quality Management System			
7.5.1	State the company policy on quality management.	1		Quality management policy
7.5.2	Describe the company's process model.	2		Process model
7.5.3	List the process levels.	1		Process model
7.5.4	Differentiate between process owner, process manager and process user.	2		Process model

	7.6 Company QMS Documentation			
7.6.1	Describe the structure of the QMS documentation.	2		Process description
7.6.2	State where to find the process document.	1		Process description
7.6.3	Describe the template.	2	Identify QMS document, its significance.	Process description
7.6.4	Describe the notification of changes in regulatory documents.	2		Process description

	7.7 Company AIS Processes			
7.7.1	Describe the AIS processes.	2		Process documentation
7.7.2	List AIS quality indicators.	1	KPIs, balanced score card.	Process documentation
7.7.3	Apply pre-defined AIS processes.	3	Relevant work instructions.	Process documentation

8. SAFETY MANAGEMENT SYSTEMS

The general objectives are to enable students to:
Understand the basic principles of safety management systems;
Describe the impact of safety management systems to AIS/AIM.

	8.1 Principles of Safety Management			
8.1.1	Be aware of the underlying need for safety management policy and principles.	0	Lessons learnt from accidents, rising traffic levels, best practice.	
8.1.2	Be aware of the reactive and proactive nature of safety management policy and principles.	0	Nature of accidents, Reason Model, incident investigation, safety assessment.	

	8.2 ATS Safety Management			
8.2.1	State the responsibilities of the different authorities responsible for ATS safety management.	1	ICAO Annex 11; ICAO Doc 4444	
8.2.2	State the objectives of ATS safety management.	1		ICAO Doc 4444
8.2.3	List the main elements of an ATS safety management programme.	1		ICAO Doc 4444
8.2.4	Be aware of the need for incident reporting systems.	0		ICAO Doc 4444
8.2.5	State the need for safety reviews.	1		ICAO Doc 4444
8.2.6	Be aware of the scope of safety reviews.	0		ICAO Doc 4444
8.2.7	State the need for safety assessments.	1		ICAO Doc 4444
8.2.8	Be aware of safety enhancing measures.	0		ICAO Doc 4444

	8.3 Safety Policy			
8.3.1	Be aware of the EATM Safety Policy Statement.		Safety management, safety responsibility, the priority of safety, the safety objective of an air navigation system.	
8.3.2	Be aware of EATM safety management principles.		Safety management system framework, safety achievement, safety assurance; safety promotion, safety plan...	Safety Management Handbook

	8.4 Safety Regulations			
8.4.1	Be aware of the role of safety regulations.	0	Purpose of safety regulations, objectives of the national regulator, objectives of international safety institutions	Civil Aviation Regulations publications
8.4.2	List the safety regulation documents.	1	Safety Regulatory Requirements (ESARRs), regulation advisory documentation, national regulations.	
8.4.3	Be aware of general safety regulatory requirements for ATM service personnel.	0		ESARR 5
8.4.4	Be aware of the impact of safety regulations on AIS.	0		

	8.5 National / State and Company Safety Management Systems			
8.5.1	State the organisation of national safety management systems.	1		
8.5.2	Be aware of the working principles of the national safety management systems.	0		
8.5.3	State the organisation of the company's safety management system.	1		
8.5.4	Be aware of the company's safety management policy statement.	0		
8.5.5	Describe the working principles of the company's safety management system.	2		
8.5.6	List the publications or information provided by the company's safety management system.	1		
8.5.7	Describe the impact of safety management on AIM.	2		

9. HUMAN PERFORMANCE

The general objective is to enable students to:
Appreciate the factors that affect personal performance;
Appreciate the factors that affect team performance.

	9.1 Individual behaviour			
9.1.1	Recognise the differences and shared attributes that exist between people.	1	Attitudes, culture, language, etc.	
9.1.2	Recognise the danger of boredom.	1		
9.1.3	Recognise the danger of overconfidence and complacency.	1		
9.1.4	Recognise the danger of fatigue.	1	Sleep disturbance/deprivation, heavy workload.	
9.1.5	Identify factors involved in work satisfaction.	1		
9.1.6	Apply appropriate learning techniques.	3	Interactive methods, self-study, practical, etc.	

9.2 Professional conduct				
9.2.1	Recognise the need for professional conduct in AIS.	1	Adherence to rules and regulations, quality and safety issues.	

9.3 Teamwork				
9.3.1	Identify factors involved in human relations.	1	Team resource management.	
9.3.2	Describe the positive effect of learning and working together.	2	Sharing knowledge and experiences.	
9.3.3	Describe the principles of team work.	2	Team membership, group dynamics, conflict and conflict solutions.	
9.3.4	Identify leader style and group interaction.	1		

9.4 Stress				
9.4.1	Define "stress".	1		
9.4.2	Recognize the symptoms and sources of stress.	1	Behavioral changes, lifestyle changes, physical symptoms, crisis events.	Human Factors Module: Critical Incident Stress Management.
9.4.3	Recognise the stages of stress.	1	Stress performance curve.	
9.4.4	Name techniques for stress management.	1	Relaxation techniques, diet and lifestyle, exercise.	

9.5 Human error				
9.5.1	Define "human error".	1		
9.5.2	Describe the factors that help to cause error.	2	Fatigue, lack of skill, misunderstanding, distraction, etc.	
9.5.3	List types of error.	1	Mistakes, violations, lapse, etc.	
9.5.4	Explain the danger of violations becoming accepted as practice.	2		

9.6 Interpersonal communication				
9.6.1	Define "communication".	1		
9.6.2	Define "the communication process".	1	Sender, encoder, transmitter, signal, interference, reception, decoder, receiver.	
9.6.3	Describe the factors that affect verbal communication.	2	Word choice, intonation, speed, tone, distortion, expectation, noise, interruption.	
9.6.4	Describe the factors that affect nonverbal communication.	2	Touch, sight, sound, choice, body language, expectation, distortion, interruption.	
9.6.5	List good communication practices.	1	Speaking, listening, visual communication.	

9.7 The working environment				
9.7.1	Define "ergonomics".	1		
9.7.2	Recognise the need for good workplace design.	1	Light, insulation, décor, space, facilities, etc.	
9.7.3	Recognise the need for effective design at the workstation.	1	Good seating position, avoid strain, etc.	
9.7.4	Identify equipment at a workstation.	1	Communication means, information monitors, computer, printer, etc.	

9.8 Health and well-being				
9.8.1	Recognise the effect of health on performance.	1	Fitness, diet, drugs, alcohol, etc.	
9.8.2	Be aware of company policy on healthcare.	0	Preventive programmes.	
9.8.3	State the company programmes on healthcare.	1		
9.8.4	Be aware of resources available for counselling.	0		

10. EQUIPMENT AND SYSTEMS

The general objectives are to enable students to:

Recognize the equipment and systems that are in general use in ANS;

Appreciate how this equipment and systems contribute to safe and efficient ANS; Use computer and other equipment required for AIS functions.

10.1 ANS equipment				
10.1.1	Recognize the main items of ANS equipment.	1	Communications systems, surveillance systems, safety systems.	
10.1.2	Recognize the main items of AIS equipment.	1	Communications systems, data processing systems, plotting systems.	

	10.2 Communications systems			
10.2.1	State the principles of radio.	1		
10.2.2	Recognise the characteristics of radio waves.	1	Propagation limitations.	
10.2.3	State the use, characteristics and limitations of frequency bands.	1	Use in ATS, navigation and communications, usage and application in the Aeronautical Mobile Service, VHF, UHF, HF.	
10.2.4	State the use of radio in ANS.	1		
10.2.5	Describe the working principles of a transmitting and receiving system.	2		
10.2.6	Recognise, on a basic block diagram, the components of a transmitter/receiver system.	1		
10.2.7	State the principles of VDF/UDF.	1	VDF/UDF, QDM, QDR, QTF.	
10.2.8	State the precision of VDF/UDF used in the national system.	1		
10.2.9	State the use of other communications systems in ANS.	1	Telephone, interphone, intercom, email, internet, fax, etc.	
10.2.10	State the use of SELCAL and ACARS.	1	Airline operations.	
10.2.11	State the use of data link communications.	1	CPDLC.	

	10.3. Aeronautical telecommunications systems			
10.3.1	List the main telecommunications networks used for the exchange of information.	1	AFTN, SITA, CIDIN, ATN, AMHS.	ICAO Annex 10; ICAO Annex 15; ICAO Doc 8126
10.3.2	Describe the main features of these networks.	2		ICAO Annex 10
10.3.3	Identify messages sent via these networks.	1	NOTAM, ATS and MET messages, etc.	
10.3.4	Recognise the benefits of the automatic exchange of AIS data.	1	Accuracy, speed, security, nonverbal communication.	
10.3.5	Recognise the limitations of the automatic exchange of AIS data.	1	Non-recognition of systems failure.	
10.3.6	State the working principles of broadcasting systems.	1	e.g. ATIS, VOLMET.	
10.3.7	Explain the use of these broadcasting systems in ATS.	2		
10.3.8	State the principles of closed circuit information systems.	1	CCIS.	
10.3.9	Explain the use of CCIS in AIS.	2	Data carried on CCIS.	

	10.4. Surveillance systems			
10.4.1	State the principles of radar.	1		
10.4.2	Recognise the characteristics of radar waves.	1		
10.4.3	Recognise the use of different types of radar.	2	Long and short range radars, weather radar, high resolution radars.	
10.4.4	Recognise the characteristics, including limitations, of different types of radar.	1	Frequency bands, long and short range radars, weather radar, high resolution radars.	
10.4.5	Explain the working principles of primary radar.	2	PSR.	
10.4.6	Explain the working principles of secondary surveillance radar.	2	SSR, Mode A, Mode C.	
10.4.7	State the uses of PSR and SSR in ATC.	1	Surface movement, DFTI, PAR/GCA, aerodrome, approach and en-route.	
10.4.8	List the advantages and disadvantages of PSR and SSR.	1		
10.4.9	State the principles of Mode S.	1		
10.4.10	Recognise the use of Mode S in ATC systems.	1		
10.4.11	State the working principles of Automatic Dependent Surveillance systems.	1	ADS, satellite systems (GPS, GNSS), data links.	
10.4.12	Be aware of the use and limitations of ADS.	0	Situational awareness, Update times, no voice prompts, universal availability.	

	10.5 Computerisation			
10.5.1	State the difference between hardware and software.	1		
10.5.2	Recognise hardware components.	1	Terminal, printer, keyboard, monitor, modem, network, etc.	
10.5.3	Recognise software components.	1	Programmes and applications, operating systems, files, etc.	
10.5.4	Describe common operating systems.	2	DOS, UNIX, LINUX, W INDOW S, etc.	
10.5.5	Use input devices.	3	Mouse, keyboard, touch input display, etc.	
10.5.6	Use text processing applications.	3	e.g. MS W ord, Excel.	
10.5.7	Use information storage devices.	3	File systems, CD-ROM, DVD, memory stick, etc.	

APPENDIX
Curriculum for AIM / ARO / FPL Training

	Module 2A: AIS Officer Training

* *Optional: subject(s) to be followed only if applicable to function tasks*
** *NON-Optional: subject(s) to followed which cannot be excluded,*
inorder to carry out the function accordingly

#	Subject / Topic	Credit	Recommended References	Compliancy Reference

1. THE AERONAUTICAL INFORMATION SERVICES

The general objectives are to enable students to:
Appreciate how the aeronautical information services function; Explain how information is collected and distributed

	1.1 Principles of AIS**			
1.1.1	Recognise the need for AIS.	1		ICAO Annex; ICAO Doc 8126
1.1.2	Recognise the need for aeronautical information in ATM.	1		ICAO Annex 11
1.1.3	Identify the need for global uniformity.	1		ICAO Annex 15; ICAO Doc 8126
1.1.4	Identify the volume and scope of information handled by AIS.	1		
1.1.5	Differentiate between permanent and temporary information as well as information of an explanatory, advisory or administrative nature.	2	NOTAM and SUP versus AIP, AIP Amendment and AIC.	

	1.2 Organisation of AIS**			
1.2.1	Describe the status of AIS within the aviation administration.	2		ICAO Doc 8126
1.2.2	Describe the organisation of the Aeronautical Information Service.	2		ICAO Doc 8126
1.2.3	Explain the liaison with other related services.	2		ICAO Doc 8126
1.2.4	Illustrate the information flow within AIS.	2		ICAO Doc 8126

	1.3 Documentation**			
1.3.1	Explain the need for documentation.	2		ICAO Annex 15; National documentation
1.3.2	List the sources of documentation available.	1	ICAO publications, national regulations.	
1.3.3	List the documentation used in AIS.	1	National or local documentation, AIP and SOP.	ICAO Doc 8126
1.3.4	Describe the content of the most frequently used documents in AIS.	2	ICAO SARPs (Annexes), Docs (Procedures for Air Navigation Services), Manuals, Air Navigation Plan Publications, ICAO Doc 8126 other - IATA, ITU, WMO, local or national documentation.	ICAO Doc 8126
1.3.5	List methods to store, locate and retrieve documentation.	1	Electronic form (aeronautical databases), paper copy (manual library).	ICAO Doc 8126

	1.4 Responsibilities and functions of AIS**			
1.4.1	Specify the responsibilities of a contracting state.	1	Provision of AIS.	ICAO Annex 15
1.4.2	Describe the functions of AIS.	2		ICAO Annex 15
1.4.3	Appreciate the need for the distribution of appropriate information.	2		ICAO Annex 15; ICAO Doc 8126;
1.4.4	Appreciate the need for the authenticity of information to be distributed.	2	Quality Management Systems.	ICAO Annex 15; ICAO Doc 8126
1.4.5	State the originators of raw data.	1	Local originators.	ICAO Doc 8126
1.4.6	List the various types of raw data.	1		ICAO Doc 8126
1.4.7	Describe the exchange of aeronautical information with other services or States.	2		ICAO Annex 15
1.4.8	Describe the means by which aeronautical information is distributed.	2	NOTAM, AIP, AIC, AIRAC, SUP.	
1.4.9	Recognise the information distributed through the AFS.	1	ATS messages, NOTAM, MET, AO, service messages, etc.	

	1.5 Aeronautical Information Publication Products**			
1.5.1	Explain the need for the Integrated Aeronautical Package.	2	Collect, collate, edit, format, publish and distribute aeronautical information.	ICAO Annex 15
1.5.2	List the principle users of the Integrated Aeronautical Package.	1	Flight operations, ATS units, third party suppliers.	
1.5.3	List the contents of the Integrated Aeronautical Package.	1	AIP, AIP AMDT, AIP SUP, NOTAM, PIB, AIC and checklists, list of valid NOTAM.	ICAO Annex 15; ICAO Doc 8126
1.5.4	State the authority responsible for the publication and distribution of the Integrated Aeronautical Package.	1	National AIS/ANSP/NSA or delegated authority.	ICAO Annex 15; ICAO Doc 8126
1.5.5	Describe the methods of distribution of the Aeronautical Information Published Products.	2	Distribution list, mailing, fax, AFTN, email, other	
1.5.6	Explain the purpose of the AIP.	2	Essential information of a lasting character, permanent information and temporary changes of a long duration.	ICAO Annex 15; ICAO Doc 8126
1.5.7	Explain the structure of the AIP.	2	General (GEN), En route (ENR) and Aerodromes (AD).	ICAO Annex 15; ICAO Doc 8126
1.5.8	List the basic contents of Part 1 General (GEN).	1	National regulations and requirements, tables and codes, services, charges for ADs/Heliports and air navigation services.	ICAO Annex 15; ICAO Doc 8126
1.5.9	List the basic contents of Part 2 En route (ENR).	1	General rules and procedures, airspace classification, ATS routes, radio navigation aids and systems, navigation warnings, en route charts.	ICAO Annex 15; ICAO Doc 8126
1.5.10	List the basic contents of Part 3 Aerodromes (AD).	1	Aerodromes, heliports, charts.	ICAO Annex 15; ICAO Doc 8126
1.5.11	Explain how an AIP is updated.	2	AIP amendments, AIRAC, AIP supplements, NOTAM.	ICAO Annex 15
1.5.12	Explain the purpose of the AIP Amendment.	2	Permanent changes.	ICAO Annex 15; ICAO Doc 8126
1.5.13	Describe how AIP Amendments are produced.	2	Specifications, format, color coding.	ICAO Annex 15
1.5.14	Explain the purpose of the AIP Supplement.	2	Temporary changes of long duration, information of short duration with extensive text/graphics.	ICAO Annex 15; ICAO Doc 8126
1.5.15	Describe how AIP Supplements are produced.	2	Specifications, format, colour coding.	ICAO Annex 15; ICAO Doc 8126
1.5.16	Explain the purpose of NOTAM.	2	Information of a temporary nature and of short duration or when operationally significant permanent changes, or temporary changes of long duration.	ICAO Annex 15; ICAO Doc 8126
1.5.17	List the information contained in a NOTAM.	1		ICAO Annex 15; ICAO Doc 8126
1.5.18	Describe the NOTAM format.	2		ICAO Annex 15; ICAO Doc 8126
1.5.19	List special series NOTAM.	1	SNOWTAM, ASHTAM, BIRDTAM.	ICAO Annex 15; ICAO Doc 8126
1.5.20	Explain the purpose of the Preflight Information Bulletin (PIB).	2	Plain language bulletins, current information on the status of facilities.	ICAO Annex 15; ICAO Doc 8126
1.5.21	State sources of information in a PIB.	1	NOTAM, SNOWTAM and Met.	ICAO Annex 15; ICAO Doc 8126
1.5.22	Recognise the scope of a PIB.	1	Area to be covered.	ICAO Doc 8126
1.5.23	Describe the contents of a PIB.	2	Navigation warnings, general information, date and time of issue.	ICAO Doc 8126
1.5.24	List the bulletin types.	1	Area, route, aerodrome, urgent operational significance.	ICAO Doc 8126
1.5.25	Identify the structure of the PIB output.	1	Heading, en route and aerodrome information, navigation warnings.	ICAO Doc 8126
1.5.26	Explain the purpose of the Aeronautical Information Circular (AIC).	2	Administrative information, advanced notice of major changes.	ICAO Annex 15; ICAO Doc 8126
1.5.27	Explain the structure of the AIC.	2		ICAO Annex 15 ; ICAO Doc 8126
1.5.28	List information appropriate to an AIC.	1		ICAO Annex 15 ; ICAO Doc 8126
1.5.29	Explain the purpose of Checklists.	2		ICAO Doc 8126
1.5.30	Explain the purpose of lists of valid NOTAM.	2		ICAO Doc 8126

	1.6 Aeronautical charts**			
1.6.1	Explain the need for aeronautical charts.	2		ICAO Annex 15; ICAO Doc 8126 ; ICAO Doc 8697
1.6.2	List the types of aeronautical charts.	1		ICAO Annex 15; ICAO Annex 4; ICAO Doc 8697
1.6.3	State the information contained in aeronautical charts.	1		ICAO Annex 4; ICAO Doc 8697
1.6.4	Identify symbols and information found on maps and charts.	1		ICAO Annex 4
1.6.5	Describe the operational function of aeronautical charts.	2		ICAO Annex 4; ICAO Doc 8697
1.6.6	Differentiate between the various relevant charts and state their specific use.	2	Charts provided by AIS, AIP charts, national and military aeronautical charts.	
1.6.7	State the ICAO categories for instrument approach charts.	1	Categories A, B, C, D – approach speeds.	ICAO Doc 8168

2. ARO and AERODROME AIS UNITS

The general objectives are to enable students to:
Understand the function of the Air Traffic Services Reporting Office (ARO); Understand the function of the Aerodrome AIS Unit;
Recognise the information required by pilots prior to a flight.

	2.1 ATS reporting office and Aerodrome AIS Unit**			
2.1.1	State the main functions of an Air Traffic Services Reporting Office (ARO).	1	Flight plan acceptance.	
2.1.2	State the main functions of an Aerodrome AIS Unit.	1	Pre-flight briefing, post flight information.	
2.1.3	Specify the requirements for the physical location of an ARO/Aerodrome AIS Unit.	1		Doc 8126
2.1.4	Describe the coverage zone of an ARO/Aerodrome AIS Unit.	2		Doc 8126
2.1.5	List the detailed information to be held.	1		ICAO Annex 15; ICAO Doc 8126

	2.2 Flight plans *			
2.2.1	Define flight plan.	1		ICAO Annex 2
2.2.2	Differentiate the types of flight plan.	2	FPL, AFIL, RPL.	ICAO Doc 4444
2.2.3	Recognise ICAO model flight plan form.	1		ICAO Doc 4444
2.2.4	List the items contained in a flight plan.	1	Items and their denomination.	ICAO Annex 2; ICAO Doc 4444
2.2.5	Differentiate the three parts of a flight plan form.	2	Section COM, ATS data and supplementary information.	
2.2.6	Recognise the AFTN format (including supplementary information).	1	AFTN format, Flight plan AFTN message.	ICAO Doc 4444
2.2.7	Describe the conditions under which a flight plan shall be submitted.	2	Rules of the Air; national differences.	ICAO Annex 2
2.2.8	State the times when a flight plan has to be submitted.	1	Rules of the Air; national and regional differences regional differences.	ICAO Annex 2; ICAO Doc 7030
2.2.9	Explain the procedure for the submission of a flight plan.	2		ICAO Doc 4444
2.2.10	List the categories of ATS messages.	1	Emergency, movement/control and flight information messages.	ICAO Doc 4444
2.2.11	List the flight plan associated messages.	1		ICAO Doc 4444

	2.3 Flight crew information *			
2.3.1	State the responsibility of pilots to obtain pre-flight briefing.	1		ICAO Annex 2; ICAO Annex 6
2.3.2	Be familiar with the flight preparation of a pilot.	0	Aircraft and equipment serviceability. Fuel, passenger and cargo manifest. AIS and MET briefing.	ICAO Annex 6
2.3.3	List methods of briefing.	1	Self-briefing (internet); personal, telephone, fax.	
2.3.4	State the purpose of post-flight information.	1		ICAO Annex 15; ICAO Doc 8126

3. GENERAL DATA MANAGEMENT

The general objectives are to enable students to: Receive and process incoming data;
Determine the method of publication; Distribute data for further processing.

	3.1 Working procedures**			
3.1.1	Explain the need for working procedures.	2	Uniformity, reduction of errors, mistakes and duplication of work.	
3.1.2	Describe local working procedures.	2	e.g. Special filing procedures, local lists, checks for completeness, additional duties during night shift, etc.	Local procedures
3.1.3	Apply local working procedures.	3		

	3.2 Emergency procedures**			
3.2.1	Describe procedures applicable in the event of equipment failure.	2	Hardware.	Local procedures
3.2.2	Describe procedures applicable in the event of the loss or nonreception of critical data.	2	Software and hardware.	Local procedures
3.2.3	Describe procedures applicable in the event of a severe threat to the AIS unit.	2	e.g. Fire, emergency evacuation, Local Quick Reference Handbook.	Local procedures
3.2.4	Select the appropriate checklists for the above emergency situations.	3	Local Quick Reference Handbook.	Local procedures

3.3 Operation of equipment and software**			
3.3.1	List the equipment and applications in use at the AIS unit.	1 Hardware and software.	
3.3.2	Describe the use of the various applications.	2 Software packages for AIS systems.	
3.3.3	Describe the use of the various items of equipment.	2	
3.3.4	Operate the equipment.	3 Simulated and/or under supervision.	

3.4 Error indications (computer, software)**			
3.4.1	Recognise the most significant error messages given by the software applications in use at the AIS unit.	1	Local procedures
3.4.2	Describe the significance of error messages given by the software applications in use at the AIS unit.	2	Local procedures
3.4.3	Take appropriate corrective action.	3	Local procedures

3.5 Encode/decode aeronautical information**			
3.5.1	Encode and decode ICAO "abbreviations and codes".	3	ICAO Doc 8400
3.5.2	Encode and decode national "abbreviations and codes".	3	National AIP; GEN 2
3.5.3	Encode and decode ICAO Location Indicators.	3	ICAO Doc 7910
3.5.4	Encode and decode ICAO Aircraft Type Designators.	3	ICAO Doc 8643
3.5.5	Encode and decode ICAO chart symbols.	3	ICAO Annex 4
3.5.6	Encode and decode national chart symbols.	3	National AIP GEN 3
3.5.7	Encode and decode NOTAM qualifiers.	3 NSC and Q-line.	ICAO Doc 8126
3.5.8	Encode and decode NOTAM items.	3 Items A-G.	ICAO Annex 15
3.5.9	Encode and decode SNOWTAM, ASHTAM, (BIRDTAM) items.	3 Items A-T.	ICAO Annex 15; SNOWTAM Harmonisation Guidelines

3.6 Translate aeronautical information**			
3.6.1	Translate aeronautical information using appropriate ICAO terminology.	3 Translate into English and/or local language.	ICAO Doc 9713

3.7 Perform quality checks on raw data and aeronautical information**			
3.7.1	Verify the raw data.	3 Authorised source, completeness, accuracy, validity, etc.	ICAO Annex 15; ADP and SDP; ICAO Doc 8126
3.7.2	Verify completeness, validity and presentation of aeronautical information.	3 *Note: Refers to product before distribution.*	

3.8 Process post-flight information*			
3.8.1	Describe the method of processing post-flight information.	2	ICAO Annex 15; ICAO Doc 8126
3.8.2	Process post-flight information.	3	

3.9 Provide data for compiling statistical data**			
3.9.1	Select the required data for compiling statistical data.	3	Local procedures
3.9.2	Retrieve the required data for compiling statistical data.	3	Local procedures
3.9.3	Deliver the required data for compiling statistical data.	3	Local procedures

3.10 Ensure traceability of data/aeronautical information**			
3.10.1	Explain the need for recording and filing raw data.	2	ICAO Doc 8126; EUROCONTROL ADP and SDP
3.10.2	Describe the procedures to ensure traceability of data/aeronautical information.	2	Local procedures
3.10.3	Apply the procedures to ensure traceability of data/aeronautical information.	3	
3.10.4	Detect data anomalies or errors.	3	
3.10.5	Correct data anomalies or errors.	3	Local procedures

	3.11 Process raw data**			
3.11.1	List the authorised sources of raw data.	1		ICAO Doc 8126
3.11.2	Describe the type of data originating from authorised sources of raw data.	2		
3.11.3	List channels of communication for the submission of raw data.	1	Fax, email, mail, AFTN, etc.	ICAO Doc 8126
3.11.4	Verify that the raw data to be published by AIS comes from an appropriate originator.	3		ICAO Annex 15; Local procedures
3.11.5	Describe the process used for filing raw data.	2		Local procedures
3.11.6	File raw data.	3		
3.11.7	Describe the process of verifying the raw data.	2		ICAO Annex 15; EUROCONTROL ADP and SDP
3.11.8	Verify raw data.	3		
3.11.9	Describe the criteria to be applied for determining the categories of information.	2	Basic, permanent, temporary and of short duration, temporary and of long duration. Information of an explanatory, advisory or administrative nature.	ICAO Doc 8126
3.11.10	Associate the categories of information with the methods of publication.	3	AIP + AMDT, AIC, SUP, NOTAM and charts.	ICAO Annex 15
3.11.11	Select the means of publication.	3		
3.11.12	Determine if proposed publication/effective date can be met.	3		Local procedures
3.11.13	Request a new publication date if necessary.	3	Co-ordinate a new publication/ effective date when the proposed publication/effective date cannot be met	Local procedures
3.11.14	Describe the process of data distribution for further processing.	2		Local procedures
3.11.15	Distribute the data for further processing.	3		Local procedures

4. STATIC DATA

The general objectives are to enable students to:
Describe and explain the purpose, function and significance of static data; Store static data in a database;
Provide required static data for other databases.

	4.1 Significance of static data**			
4.1.1	Explain the purpose, function and significance of static data.	2		ICAO Doc 8126;

	4.2 Compile positional data**			
4.2.1	Explain the requirements for the formatting and resolution of positional data.	2		ICAO Annex 15; ICAO Doc 812;6 ICAO Annex 4
4.2.2	Convert positional data into the required format and resolution.	3		ICAO Doc 9674; ICAO Doc 8126; ICAO Annex 4

	4.3 Store static data (including positional data)**			
4.3.1	Describe the procedures for storing static data.	2		Local Database Manual
4.3.2	Describe the criteria to be applied for storing data into the database.	2		Local Database Manual
4.3.3	Store data in the database.	3		Local Database Manual

	4.4 Maintain database of static data**			
4.4.1	Describe the model of the database used.	2	ORACLE, SQL, SAP Relational databases, Connection to GIS, AICM/AIXM	Local Database Manual
4.4.2	Describe the structure of the database used.	2		Local Database Manual
4.4.3	Operate the database used.	3		Local Database Manual
4.4.4	Describe the quality checks carried out on the data base.	2	Automatic or manual.	Local Database Manual; Local procedures
4.4.5	Carry out quality checks.	3		Local procedures
4.4.6	Compile the necessary reports/notifications on changes in the database.	3		Local procedures
4.4.7	Transmit the reports/notifications to database users.	3		Local procedures
4.4.8	Record updates to the static data database.	3		Local procedures

4.5 Maintain the library of foreign AIS publications**			
4.5.1	Describe the procedures for updating the library of foreign AIS publications.	2	Local procedures
4.5.2	Update the library of foreign AIS publications.	3	Local procedures
4.5.3	Record updates made to the library of foreign AIS publications.	3	Local procedures

4.6 Prepare static data for other national and international databases**			
4.6.1	List the requirements of the EAD for static data.	1	EAD User manual SDO DP Operational User Handbook DP
4.6.2	Describe the process of updating the EAD data base.	2	EAD User manual SDO DP; Operational User Handbook DP
4.6.3	Select the required static data for EAD.	3	Local procedures
4.6.4	Provide static data to EAD.	3	EAD User manual SDO DP; Operational User Handbook DP
4.6.5	Explain the requirements of national databases for static data.	2	Local procedures
4.6.6	Describe the process of updating other national databases.	2	Local procedures
4.6.7	Select the required static data for other national databases.	3	Local procedures
4.6.8	Provide static data to other national databases.	3	Local procedures
4.6.9	Record the provision of static data to other national database.	3	Local procedures

5. DYNAMIC DATA

The general objectives are to enable students to:
Describe and explain the purpose, function and significance of dynamic data;
Prepare, distribute and store outgoing dynamic data;
Receive process and store incoming dynamic data.

5.1 Significance of dynamic data**			
5.1.1	Explain the purpose, function and significance of dynamic data.	2	

5.2 General**			
5.2.1	State NOTAM types.	1	NOTAM -N, -R and -C.	ICAO Doc 8126;
5.2.2	Explain the application of NOTAM -N, -R and -C.	2		ICAO Doc 8126;
5.2.3	State NOTAM series and number.			ICAO Annex 15; National series assignment
5.2.4	Describe NOTAM item content.	2	Item Q) and Items A) to G).	ICAO Annex 15
5.2.5	Explain the purpose of NOTAM qualifiers (Q-Line).		NOTAM Selection Criteria (NSC), automation.	ICAO Doc 8126
5.2.6	State the general rules relating to NOTAM qualifiers.	1		ICAO Doc 8126;
5.2.7	Describe the content of NOTAM qualifiers.	2	FIR, NOTAM code, traffic, purpose, scope, lower/upper, geographical reference, radius.	ICAO Annex 15;

5.3 Process foreign dynamic data**			
5.3.1	Convert NOTAM received into a correctly formatted system NOTAM.	3		Local procedures
5.3.2	Check all items of incoming NOTAM.	3	Syntax.	Local procedures
5.3.3	Translate Item E into English.	3		Local procedures
5.3.4	Clarify erroneous and/or ambiguous NOTAM content.	3	Check with NOTAM originator.	Local procedures
5.3.5	Check NOTAM sequence.	3	Manually or semi- automatically.	Local procedures
5.3.6	Request missing NOTAM.	3	Investigation, time limit.	Local procedures
5.3.7	Explain the purpose of a NOTAM database.	2	NOTAM production, PIB.	ICAO Doc 8126
5.3.8	Describe NOTAM storage	2	Electronic, manual.	Local procedures
5.3.9	State the area of coverage of a NOTAM database.			
5.3.10	Describe quality control procedures.			
5.3.11	Carry out quality control checks.			
5.3.12	Explain the requirement to redistribute NOTAM.			
5.3.13	Describe procedures for NOTAM re-distribution.			
5.3.14	Address NOTAM for redistribution.			Local procedures
5.3.15	Re-distribute NOTAM.			
5.3.16	Identify foreign checklists.			Local procedures
5.3.17	Describe procedures for comparing foreign checklists with stored NOTAM.		Semi-automatic or manual.	Local procedures
5.3.18	Store foreign NOTAM.			Local procedures

	5.4 Publish NOTAM*			
5.4.1	Analyse NOTAM proposal for further processing.	3		Local procedures
5.4.2	Allocate NOTAM series, number and type.	3		Local procedures
5.4.3	Encode the qualifier line and all identifiers.	3	NOTAM Selection Criteria.	ICAO Doc 8126; Local procedures
5.4.4	Complete all NOTAM items.	3		ICAO Doc 8126;
5.4.5	Address NOTAM.	3		Local procedures
5.4.6	Describe procedures for NOTAM distribution.	2		Local procedures
5.4.7	Distribute NOTAM.	3		ICAO Doc 8126;
5.4.8	Store published NOTAM in NOTAM database.	3		Local procedures

	5.5 Publish NOTAM checklist*			
5.5.1	Explain the rules for producing a NOTAM checklist.	2		ICAO Doc 8126; ICAO Annex 15;
5.5.2	Produce a NOTAM checklist.	3	Manual or automatic.	Local procedures;
5.5.3	Address a NOTAM checklist.			Local procedures;
5.5.4	Distribute a NOTAM checklist.			ICAO Doc 8126; Local procedures;
5.5.5	Store published NOTAM checklist in NOTAM database.			Local procedures;

	5.6 Publish Trigger NOTAM*			
5.6.1	Explain the purpose of 'trigger' NOTAM.			
5.6.2	Describe 'trigger' NOTAM procedures relevant to AIRAC Amendment.			ICAO Doc 8126; Local procedures
5.6.3	Describe trigger NOTAM procedures relevant to AIP Supplements.			ICAO Doc 8126; Local procedures
5.6.4	Produce 'trigger' NOTAM.			ICAO Doc 8126
5.6.5	Address 'trigger' NOTAM.			Local procedures
5.6.6	Distribute 'trigger' NOTAM.			Local procedures
5.6.7	Store the published 'trigger' NOTAM checklist in the NOTAM database.			Local procedures

	5.7 Publish SNOWTAM*			
5.7.1	Explain the purpose of 'SNOWTAM'.	2		ICAO Annex 15;
5.7.2	Name the originator(s) of raw data for SNOWTAM.	1		
5.7.3	Describe the methods of obtaining raw data for SNOWTAM.	2		
5.7.4	Describe the methods by which data for SNOWTAM is transmitted to AIS.	2		
5.7.5	Complete SNOWTAM form.	3		
5.7.6	Address SNOWTAM.	3		
5.7.7	Distribute SNOWTAM.	3		
5.7.8	Store the published SNOWTAM in NOTAM database.	3		

	5.8 Publish ASHTAM*			
5.8.1	Explain the purpose of 'ASHTAM'.	2		Local procedures
5.8.2	Name the originator(s) of raw data for ASHTAM.	1		Local procedures
5.8.3	Explain the methods of obtaining raw data for ASHTAM.	2		Local procedures
5.8.4	Describe the methods by which data for ASHTAM is transmitted to AIS.	2		Local procedures
5.8.5	Complete ASHTAM format.	3		ICAO Annex 15; Local procedures
5.8.6	Address ASHTAM.	3		Local procedures
5.8.7	Describe procedures for ASHTAM distribution.	2		Local procedures
5.8.8	Distribute ASHTAM.	3		Local procedures
5.8.9	Store published ASHTAM in NOTAM database.	3		Local procedures

	5.9 Produce PIB*			
5.9.1	Describe the content of an area bulletin.	2	NOTAM, ASHTAM.	ICAO Doc 8126
5.9.2	Describe the content of a route bulletin.	2	NOTAM, ASHTAM.	ICAO Doc 8126
5.9.3	Describe the content of an aerodrome bulletin.	2	NOTAM, SNOWTAM, METAR, TAF.	ICAO Doc 8126
5.9.4	Describe the content of an administrative bulletin.	2		ICAO Doc 8126
5.9.5	Explain the procedure for the preparation of a PIB.	2		ICAO Doc 8126
5.9.6	Access relevant data for PIB production.	3		Local procedures
5.9.7	Retrieve selected data for PIB production.	3		Local procedures
5.9.8	Compile PIB.	3		Local procedures
5.9.9	Transmit PIB to customer.	3		Local procedures

	5.10 Prepare tailored dynamic data**			
5.10.1	Access relevant data for tailored dynamic data production.	3		Local procedures
5.10.2	Retrieve selected data for tailored dynamic data production.	3		Local procedures
5.10.3	Compile tailored dynamic data.	3		Local procedures
5.10.4	Transmit tailored dynamic data to customer.	3		Local procedures

6. PUBLICATIONS

The general objectives are to enable students to:
Describe and explain the processes and procedures for the preparation of aeronautical publications;
Process incoming data for publication;
Prepare, distribute and store publications.

	6.1 General procedures**			
6.1.1	Describe the appropriate form for the publication of aeronautical information.	2	AIP, AIP Amendment, AIP Supplement, AIRAC, AIC.	ICAO Doc 8126; Local procedures
6.1.2	Describe the process for preparing the master copy.	2	Proof-reading, authorisation procedure.	ICAO Doc 8126
6.1.3	Describe the process for the reproduction of publications.	2	Electronic pre-press, offset printing, digital printing, analogue photocopying.	ICAO Doc 8126; Local procedures
6.1.4	Describe the procedure for transferring the copy to the printing office.	2		Local procedures
6.1.5	Describe the procedure for distributing printed/electronic publications.	2		Local procedures; eAIP Specification
6.1.6	Describe the procedure for maintaining the library of valid printed/electronic publications.	2	AIP, AIC, SUPs, etc.	Local procedures; eAIP Specification
6.1.7	Describe the procedure for maintaining the archive of cancelled/replaced publications.	2	AIP, AIC, SUPs, etc.	Local procedures

	6.2 Publish AIC**			
6.2.1	Describe the information to be notified by an AIC.	2		ICAO Annex 15; ICAO Doc 8126; Local procedures.
6.2.2	Describe the procedure for publishing an AIC checklist.	2		ICAO Doc 8126
6.2.3	Describe the format of an AIC.	2	International and national series.	ICAO Doc 8126

	6.3 Publish AIP**			
6.3.1	Describe the structure of the AIP.	2	GEN, ENR, AD.	ICAO Annex 15; ICAO Doc 8126,
6.3.2	List in detail the aeronautical information contained in each section of Part 1 - General (GEN).	1		ICAO Annex 15; ICAO Doc 8126; National AIP
6.3.3	List in detail the aeronautical information contained in each section of Part 2 - En-route (ENR).	1		ICAO Annex 15; ICAO Doc 8126; National AIP
6.3.4	List in detail the aeronautical information contained in each section of Part - 3 Aerodromes (AD).	1		ICAO Annex 15; ICAO Doc 8126; National AIP
6.3.5	Determine the section(s) or subsection(s) of the AIP to which aeronautical information applies.	3		ICAO Annex 15; ICAO Doc 8126; National AIP
6.3.6	Select chart(s) to be inserted in an appropriate section(s) or subsection(s) of the AIP.	3		ICAO Annex 15; ICAO Doc 8126
6.3.7	Describe the methods by which an AIP is updated.	2	AIP Amendment, AIP Supplement, AIRAC, NOTAM, eAIP.	ICAO Annex 15; eAIP Specification
6.3.8	Differentiate between AIP Amendment and AIP Supplement.	2	Permanent or temporary change.	ICAO Annex 15; ICAO Doc 8126

	6.4 Publish AIP AMENDMENT**			
6.4.1	Describe the information contained in an AIP Amendment.	2		ICAO Annex 15; ICAO Doc 8126
6.4.2	Describe the format of an AIP Amendment.	2		ICAO Doc 8126
6.4.3	Explain the AIRAC system.	2		ICAO Annex 15; ICAO Doc 8126
6.4.4	Describe what type of information shall be notified by AIRAC.	2		ICAO Annex 15; ICAO Doc 8126
6.4.5	Differentiate between information to be issued by AIP Amendment or AIRAC AIP Amendment.	2	Operationally significant information, AIRAC notifications, effective and publication dates, numbering, color of over- page.	ICAO Doc 8126
6.4.6	Adhere to the significant dates for AIRAC publication.	3	Effective, publication and latest dates.	ICAO Doc 8126; Local procedures

	6.5 Publish AIP SUPPLEMENT**			
6.5.1	Describe the aeronautical information contained in an AIP Supplement.	2		ICAO Doc 8126
6.5.2	Describe the format of an AIP Supplement.	2		ICAO Doc 8126
6.5.3	Describe the procedure for publishing AIP Supplements checklist.	2		ICAO Doc 8126
6.5.4	Determine what kind of information shall be notified by AIP Supplements.	3		ICAO Annex 15; ICAO Doc 8126

	6.6 Publish additional information for specific purposes**			
6.6.1	Describe the procedure for compiling a publication with additional information for specific purposes.	2		Local procedures

7. CHARTING

The general objectives are to enable students to:
Describe and explain the purpose, function and significance of charting;
Process incoming data for charting;
Prepare, distribute and store charts.

	7.1 General introduction**			
7.1.1	Explain the purpose and significance of charting.	2		ICAO Annex 4
7.1.2	Describe the main characteristics of aeronautical charts.	2	Scale, format, coverage, size, layout, conformity.	ICAO Annex 4
7.1.3	List different types of Aeronautical charts.	3		ICAO Annex 4
7.1.4	Describe contents of different aeronautical charts.	3		ICAO Annex 4
7.1.5	Decode the data depicted on charts.	3	Use of data; interpretation, legend.	ICAO Annex 4 ICAO Doc 8126 ICAO Doc 8697
7.1.6	Differentiate between the ICAO categories for instrument approach charts.	2		ICAO Doc 8168
7.1.7	Describe the process for chart production.	2		Local procedures

	7.2 Updating existing charts*			
7.2.1	Select chart(s) to be updated.	3		Local procedures
7.2.2	Select a method of updating.	3	Chart update or hand- amendment	Local procedures
7.2.3	Allocate appropriate symbol to aeronautical information.	3	Appropriate chart symbol.	ICAO Annex 4
7.2.4	Insert new data and/or change existing data.	3		ICAO Annex 4 Local procedures
7.2.5	Adapt the layout accordingly.	3	Layout, display data for the best presentation.	ICAO Doc 8697

	7.3 Creating new charts*			
7.3.1	Determine the area to be covered.	3	Coverage and scale.	ICAO Annex 4
7.3.2	Verify availability of basic map data.	3	Topographical data.	Local procedures
7.3.3	Apply the appropriate format according to the type of the chart required.	3	Format.	ICAO Annex 4 ICAO Doc. 8697
7.3.4	Determine magnetic variation.	3		Local procedures
7.3.5	Compile aeronautical information/data.	3		Local procedures
7.3.6	Allocate appropriate symbol to aeronautical information.	3	Appropriate chart symbol.	ICAO Annex 4
7.3.7	Adapt the layout accordingly	3	Layout, display data for the best presentation.	ICAO Doc 8697
7.3.8	Edit / produce prototype chart	3	If in-house production.	ICAO Doc 8697
7.3.9	Prepare chart production order for a cartographer	3	If external production.	Local procedures

	7.4 Verification of updated or new charts**			
7.4.1	Verify completeness, accuracy and presentation of the chart	3	Perform Quality checks.	Local procedures
7.4.2	Verify the updated or new chart with originator	3		Local procedures
7.4.3	Prepare printing order	3		Local procedures
7.4.4	Print chart	3		Local procedures
7.4.5	Provide chart for distribution in requested format/ media	3		Local procedures

	7.5 Maintain aeronautical chart library**			
7.5.1	File charting documentation.	3		Local procedures

8. ARO / FLIGHT PLANNING FUNCTIONS

The general objectives are to enable students to:
Receive, verify and process incoming data;
Prepare and conduct an appropriate and complete briefing.

	8.1 Process FPL and FPL associated messages*			
8.1.1	Explain all the items of a flight plan form.	2	Items and their content.	ICAO Doc 4444
8.1.2	State the cruising speeds of the most common types of aircraft.	1	Especially the most common local aircraft.	Local procedures
8.1.3	Decode FPL items.	3		ICAO Doc 4444
8.1.4	Encode FPL items.	3		ICAO Doc 4444
8.1.5	Verify all items of a flight plan.	3		ICAO Doc 4444;
8.1.6	Describe the procedures for addressing a flight plan.	2		ICAO Doc 7910;
8.1.7	Address a flight plan.	3		ICAO Doc 7910;
8.1.8	Apply the flight plan filing time procedures.	3	1hr, 3hr and national regional and local regulations, delays and earlier departures.	ICAO Annex 2; National AIP; ICAO Doc 7030;
8.1.9	Apply flight plan transmission procedures.	3	e.g. AFTN format, local procedures.	ICAO Doc 4444; ICAO Annex 10
8.1.10	List relevant CFMU limitations when filing a flight plan.	1	CIA, ANM, CRAM, AIM, SLOT, etc.RAD and ENV database.	
8.1.11	Describe the categories of ATS messages.	2	ATS or FPL.	ICAO Doc 4444
8.1.12	Differentiate the types of ATS messages and their designator.	2	ATS or FPL.	ICAO Doc 4444
8.1.13	Prepare flight plan associated messages.	3		ICAO Doc 4444
8.1.14	Address FPL associated messages.	3		ICAO Doc 4444
8.1.15	Apply flight plan associated messages transmission procedures.	3	AFTN format, local procedures.	ICAO Doc 4444; ICAO Annex 10
8.1.16	Prepare supplementary messages.	3		ICAO Doc 4444
8.1.17	Address supplementary messages.	3		ICAO Doc 4444
8.1.18	Apply supplementary messages transmission procedures.	3	AFTN format, local procedures.	ICAO Doc 4444; ICAO Annex 10
8.1.19	Describe methods of storage for a flight plan and ATS messages.	2	Manual or electronic.	Local procedures
8.1.20	Store flight plan and ATS messages.	3		Local procedures
8.1.21	Explain the purpose of a repetitive flight plan (RPL).	2		ICAO Doc 4444
8.1.22	Describe all the items contained in a RPL.	2		ICAO Doc 4444
8.1.23	Explain the collection, storage and processing of RPL data.	2	Manual or electronic.	ICAO Doc 4444; ICAO Annex 10;
8.1.24	Explain the implications for a flight plan with a special status.	2	STS/HOSP, Head of State, EXM833, etc.	

	8.2 Provide information for flight preparation*			
8.2.1	List the content of pre-flight information.	1	NOTAM, SNOWTAM, ASHTAM, NAT tracks, MET info, charts, ATFM messages, national publications.	
8.2.2	Explain the scope of the available briefing material.	2		
8.2.3	Appreciate the significance of a briefing for the customer.	2		
8.2.4	Locate the required information in the appropriate documentation.	3	AIP, AIC, Charts, etc.	
8.2.5	Retrieve required information from the data base.	3	VFR, IFR, national or international flight, etc.	
8.2.6	Communicate the required information to the customer using the appropriate technique.	3	Compile and print out, face to face, fax, phone, email, etc.	
8.2.7	Provide additional information on request.	3	Update service.	

	8.3 Accept post-flight information and transmit it to ATS/AIS*			
8.3.1	Accept post-flight information.	3	Incident/accident reports, landing information and general in-flight reports.	ICAO Annex 15; ICAO Doc 8126
8.3.2	Transmit post-flight information to ATS/AIS.	3		Local procedures

	8.4 Support incident investigation (ARO side)*			
8.4.1	Explain the procedures for the handling of an incident report form.	2		ICAO Doc 4444; ICAO Doc 9426; Local procedures; National AIP
8.4.2	Accept incident report forms.	3		Local procedures
8.4.3	Transmit the incident report forms to the appropriate authority.	3		Local procedures
8.4.4	Describe the procedures applicable in support of investigations.	2	Role of ARO in conjunction with other units and or police.	Local procedures
8.4.5	Apply the procedures applicable in support of investigations.	3		Local procedures

	8.5 Compile statistical data*			
8.5.1	List the type of statistical data required from ARO.	1		Local procedures

9. COORDINATION

The general objectives are to enable students to:
Identify when co-ordination has to be performed;
Conduct coordination in an appropriate manner.

	9.1 General**		
9.1.1	Explain the need for co-ordination.	2	
9.1.2	Explain the methods of coordination.	2	Face to face, phone, fax, email, internet, standardised procedures, language used, records/log sheet, etc.	Local procedures
9.1.3	Use appropriate coordination techniques.	3	Verbal, written etc.	Local procedures
9.1.4	Describe the interaction with other data systems.	2	Data links, EAD, pre-flight database, online applications etc.	Local procedures

	9.2 Co-ordinate with data sources**		
9.2.1	Clarify erroneous and/or ambiguous content with the source of the data.	3	SLA's	Local procedures;
9.2.2	Request missing elements.	3	SLA's	Local procedures

	9.3 Co-ordinate between AIS functions**		
9.3.1	Describe the principle functions within AIS.	2	AIS functions.	ICAO Doc 8126
9.3.2	Determine when/what to coordinate with other AIS functions.	3	AIS functions at local and adjacent units.	Local procedures

	9.4 Co-ordinate with customers**		
9.4.1	List the principle customers of an AIS unit.	1	AOs, private pilots, ATC, handling companies, other AIS units local/foreign etc.	ICAO Doc 8126
9.4.2	Characterise the customers of the AIS unit.	2	e.g. Professional, non-professional, frequent or infrequent user, etc.	
9.4.3	Describe co-ordination procedures with ATS units.	2	TWR, APP, ACC, FIC, SLA's.	Local procedures
9.4.4	Describe co-ordination procedures with other agencies/services.	2	MET, technical services, aircraft operators, CFMU, regulator, SLA's etc.	ICAO Doc 9377; Local procedures;
9.4.5	Communicate the required information to the customer.	3		Local procedures
9.4.6	Clarify the meaning of the information provided, if requested.	3		Local procedures
9.4.7	Provide any additional information if requested.	3		Local procedures

	9.5 Human factors aspects in co-ordination**		
9.5.1	State factors affecting the quality of communication.	1		ICAO Doc 9683
9.5.2	Identify communication and thinking patterns.	1		
9.5.3	Explain common behavioural patterns of customers.	2		
9.5.4	Select the appropriate way for dealing with customers.	3		
9.5.5	Apply the rules for concise communication.	3		
9.5.6	Demonstrate correct behaviour in a conflict situation.	3		
9.5.7	Demonstrate correct handling of customer complaints.	3		

APPENDIX
Curriculum for AIM / ARO / FPL Training

Module 2B: ARO / Flight Plan Officer Training

* Optional: subject(s) to be followed only if applicable to function tasks

** NON-Optional: subject(s) to followed which cannot be excluded, inorder to carry out the function accordingly

#	Subject / Topic	Credit	Recommended References	Compliancy Reference

1. THE AERONAUTICAL INFORMATION SERVICES

The general objectives are to enable students to:

Appreciate how the aeronautical information services function; Explain how information is collected and distributed

#	Subject / Topic	Credit	Recommended References	Compliancy Reference
	1.1 Principles of AIS*			
1.1.1	Recognise the need for AIS.	1		ICAO Annex; ICAO Doc 8126
1.1.2	Recognise the need for aeronautical information in ATM.	1		ICAO Annex 11
1.1.3	Identify the need for global uniformity.	1		ICAO Annex 15; ICAO Doc 8126
1.1.4	Identify the volume and scope of information handled by AIS.	1		
1.1.5	Differentiate between permanent and temporary information as well as information of an explanatory, advisory or administrative nature.	2	NOTAM and SUP versus AIP, AIP Amendment and AIC.	
	1.2 Organization of AIS*			
1.2.1	Describe the status of AIS within the aviation administration.	2		ICAO Doc 8126
1.2.2	Describe the organization of the Aeronautical Information Service.	2		ICAO Doc 8126
1.2.3	Explain the liaison with other related services.	2		ICAO Doc 8126
1.2.4	Illustrate the information flow within AIS.	2		ICAO Doc 8126
	1.3 Documentation**			
1.3.1	Explain the need for documentation.	2		ICAO Annex 15; National documentation
1.3.2	List the sources of documentation available.	1	ICAO publications, national regulations.	
1.3.3	List the documentation used in AIS.	1	National or local documentation, AIP and SOP.	ICAO Doc 8126, 4444
1.3.4	Describe the content of the most frequently used documents in ARO.	2	ICAO SARPs (Annexes), Docs (Procedures for Air Navigation Services), Manuals, Air Navigation Plan Publications, ICAO Doc 8126, 4444, other - IATA, ITU, W MO, local or national documentation.	ICAO Doc 8126, 4444
1.3.5	List methods to store, locate and retrieve documentation.	1	Electronic form (aeronautical databases), paper copy (manual library).	ICAO Doc 8126, 4444
	1.4 Responsibilities and functions of AIS and ARO**			
1.4.1	Specify the responsibilities of a contracting state.	1	Provision of AIS.	ICAO Annex 15
1.4.2	Describe the functions of AIS.	2		ICAO Annex 15
1.4.3	Appreciate the need for the distribution of appropriate information.	2		ICAO Annex 15; ICAO Doc 8126;
1.4.4	Appreciate the need for the authenticity of information to be distributed.	2	Quality Management Systems.	ICAO Annex 15; ICAO Doc 8126
1.4.5	State the originators of raw data.	1	Local originators.	ICAO Doc 8126
1.4.6	List the various types of raw data.	1		ICAO Doc 8126
1.4.7	Describe the exchange of aeronautical information with other services or States.	2		ICAO Annex 15
1.4.8	Describe the means by which aeronautical information is distributed.	2	NOTAM, AIP, AIC, AIRAC, SUP.	
1.4.9	Recognise the information distributed through the AFS.	1	ATS messages, NOTAM, MET, AO, service messages, etc.	

2. ARO / FPL and AERODROME AIS UNITS

The general objectives are to enable students to:
Understand the function of the Air Traffic Services Reporting Office (ARO); Understand the function of the Aerodrome AIS Unit;
Recognize the information required by pilots prior to a flight.

	2.1 ATS reporting office / Flight Planning Office and Aerodrome AIS Unit**		
2.1.1	State the main functions of an Air Traffic Services Reporting Office (ARO).	1	Flight plan acceptance.	
2.1.2	State the main functions of an Aerodrome AIS Unit.	1	Pre-flight briefing, post flight information.	
2.1.3	Specify the requirements for the physical location of an ARO/Aerodrome AIS Unit.	1		Doc 8126
2.1.4	Describe the coverage zone of an ARO/Aerodrome AIS Unit.	2		Doc 8126
2.1.5	List the detailed information to be held.	1		ICAO Annex 15; ICAO Doc 8126

	2.2 Flight plans**		
2.2.1	Define flight plan.	1		ICAO Annex 2
2.2.2	Differentiate the types of flight plan.	2	FPL, AFIL, RPL.	ICAO Doc 4444
2.2.3	Recognise ICAO model flight plan form.	1		ICAO Doc 4444
2.2.4	List the items contained in a flight plan.	1	Items and their denomination.	ICAO Annex 2; ICAO Doc 4444
2.2.5	Differentiate the three parts of a flight plan form.	2	Section COM, ATS data and supplementary information.	
2.2.6	Recognise the AFTN format (including supplementary information).	1	AFTN format, Flight plan AFTN message.	ICAO Doc 4444
2.2.7	Describe the conditions under which a flight plan shall be submitted.	2	Rules of the Air; national differences.	ICAO Annex 2
2.2.8	State the times when a flight plan has to be submitted.	1	Rules of the Air; national and regional differences regional differences.	ICAO Annex 2; ICAO Doc 7030
2.2.9	Explain the procedure for the submission of a flight plan.	2		ICAO Doc 4444
2.2.10	List the categories of ATS messages.	1	Emergency, movement/control and flight information messages.	ICAO Doc 4444
2.2.11	List the flight plan associated messages.	1		ICAO Doc 4444

	2.3 Flight crew information**		
2.3.1	State the responsibility of pilots to obtain pre-flight briefing.	1		ICAO Annex 2; ICAO Annex 6
2.3.2	Be familiar with the flight preparation of a pilot.	0	Aircraft and equipment serviceability. Fuel, passenger and cargo manifest. AIS and MET briefing.	ICAO Annex 6
2.3.3	List methods of briefing.	1	Self-briefing (internet); personal, telephone, fax.	
2.3.4	State the purpose of post-flight information.	1		ICAO Annex 15; ICAO Doc 8126

3. DYNAMIC DATA

The general objectives are to enable students to:
Describe and explain the purpose, function and significance of dynamic data; Prepare, distribute and store outgoing dynamic data;
Receive process and store incoming dynamic data.

	3.1 Significance of dynamic data**		
3.1.1	Explain the purpose, function and significance of dynamic data.	2		

	3.2 General**		
3.2.1	State NOTAM types.	1	NOTAM -N, -R and -C.	ICAO Doc 8126;
3.2.2	Explain the application of NOTAM -N, -R and -C.	2		ICAO Doc 8126;
3.2.3	State NOTAM series and number.			ICAO Annex 15; National series assignment
3.2.4	Describe NOTAM item content.	2	Item Q) and Items A) to G).	ICAO Annex 15
3.2.5	Explain the purpose of NOTAM qualifiers (Q-Line).		NOTAM Selection Criteria (NSC), automation.	ICAO Doc 8126
3.2.6	State the general rules relating to NOTAM qualifiers.	1		ICAO Doc 8126;
3.2.7	Describe the content of NOTAM qualifiers.	2	FIR, NOTAM code, traffic, purpose, scope, lower/upper, geographical reference, radius.	ICAO Annex 15;

	3.3 Process foreign dynamic data*			
3.3.1	Convert NOTAM received into a correctly formatted system NOTAM.	3		Local procedures
3.3.2	Check all items of incoming NOTAM.	3	Syntax.	Local procedures
3.3.3	Translate Item E into English.	3		Local procedures
3.3.4	Clarify erroneous and/or ambiguous NOTAM content.	3	Check with NOTAM originator.	Local procedures
3.3.5	Check NOTAM sequence.	3	Manually or semi- automatically.	Local procedures
3.3.6	Request missing NOTAM.	3	Investigation, time limit.	Local procedures
3.3.7	Explain the purpose of a NOTAM database.	2	NOTAM production, PIB.	ICAO Doc 8126
3.3.8	Describe NOTAM storage	2	Electronic, manual.	Local procedures
3.3.9	State the area of coverage of a NOTAM database.			
3.3.10	Describe quality control procedures.			
3.3.11	Carry out quality control checks.			
3.3.12	Explain the requirement to redistribute NOTAM.			
3.3.13	Describe procedures for NOTAM re-distribution.			
3.3.14	Address NOTAM for redistribution.			Local procedures
3.3.15	Re-distribute NOTAM.			
3.3.16	Identify foreign checklists.			Local procedures
3.3.17	Describe procedures for comparing foreign checklists with stored NOTAM.		Semi-automatic or manual.	Local procedures
3.3.18	Store foreign NOTAM.			Local procedures

	3.4 Publish NOTAM*			
3.4.1	Analyse NOTAM proposal for further processing.	3		Local procedures
3.4.2	Allocate NOTAM series, number and type.	3		Local procedures
3.4.3	Encode the qualifier line and all identifiers.	3	NOTAM Selection Criteria.	ICAO Doc 8126; Local procedures
3.4.4	Complete all NOTAM items.	3		ICAO Doc 8126;
3.4.5	Address NOTAM.	3		Local procedures
3.4.6	Describe procedures for NOTAM distribution.	2		Local procedures
3.4.7	Distribute NOTAM.	3		ICAO Doc 8126;
3.4.8	Store published NOTAM in NOTAM database.	3		Local procedures

	3.5 Publish NOTAM checklist*			
3.5.1	Explain the rules for producing a NOTAM checklist.	2		ICAO Doc 8126; ICAO Annex 15;
3.5.2	Produce a NOTAM checklist.	3	Manual or automatic.	Local procedures;
3.5.3	Address a NOTAM checklist.			Local procedures;
3.5.4	Distribute a NOTAM checklist.			ICAO Doc 8126; Local procedures;
3.5.5	Store published NOTAM checklist in NOTAM database.			Local procedures;

	3.6 Publish Trigger NOTAM*			
3.6.1	Explain the purpose of 'trigger' NOTAM.			
3.6.2	Describe 'trigger' NOTAM procedures relevant to AIRAC Amendment.			ICAO Doc 8126; Local procedures
3.6.3	Describe trigger NOTAM procedures relevant to AIP Supplements.			ICAO Doc 8126; Local procedures
3.6.4	Produce 'trigger' NOTAM.			ICAO Doc 8126
3.6.5	Address 'trigger' NOTAM.			Local procedures
3.6.6	Distribute 'trigger' NOTAM.			Local procedures
3.6.7	Store the published 'trigger' NOTAM checklist in the NOTAM database.			Local procedures

	3.7 Publish SNOWTAM*			
3.7.1	Explain the purpose of 'SNOW TAM'.	2		ICAO Annex 15;
3.7.2	Name the originator(s) of raw data for SNOW TAM.	1		
3.7.3	Describe the methods of obtaining raw data for SNOW TAM.	2		
3.7.4	Describe the methods by which data for SNOW TAM is transmitted to AIS.	2		
3.7.5	Complete SNOW TAM form.	3		
3.7.6	Address SNOW TAM.	3		
3.7.7	Distribute SNOW TAM.	3		
3.7.8	Store the published SNOWTAM in NOTAM database.	3		

	3.8 Publish ASHTAM*			
3.8.1	Explain the purpose of 'ASHTAM'.	2		Local procedures
3.8.2	Name the originator(s) of raw data for ASHTAM.	1		Local procedures
3.8.3	Explain the methods of obtaining raw data for ASHTAM.	2		Local procedures
3.8.4	Describe the methods by which data for ASHTAM is transmitted to AIS.	2		Local procedures
3.8.5	Complete ASHTAM format.	3		ICAO Annex 15; Local procedures
3.8.6	Address ASHTAM.	3		Local procedures
3.8.7	Describe procedures for ASHTAM distribution.	2		Local procedures
3.8.8	Distribute ASHTAM.	3		Local procedures
3.8.9	Store published ASHTAM in NOTAM database.	3		Local procedures

	3.9 Produce PIB*			
3.9.1	Describe the content of an area bulletin.	2	NOTAM, ASHTAM.	ICAO Doc 8126
3.9.2	Describe the content of a route bulletin.	2	NOTAM, ASHTAM.	ICAO Doc 8126
3.9.3	Describe the content of an aerodrome bulletin.	2	NOTAM, SNOW TAM, METAR, TAF.	ICAO Doc 8126
3.9.4	Describe the content of an administrative bulletin.	2		ICAO Doc 8126
3.9.5	Explain the procedure for the preparation of a PIB.	2		ICAO Doc 8126
3.9.6	Access relevant data for PIB production.	3		Local procedures
3.9.7	Retrieve selected data for PIB production.	3		Local procedures
3.9.8	Compile PIB.	3		Local procedures
3.9.9	Transmit PIB to customer.	3		Local procedures

	3.10 Prepare tailored dynamic data*			
3.10.1	Access relevant data for tailored dynamic data production.	3		Local procedures
3.10.2	Retrieve selected data for tailored dynamic data production.	3		Local procedures
3.10.3	Compile tailored dynamic data.	3		Local procedures
3.10.4	Transmit tailored dynamic data to customer.	3		Local procedures

4. ARO / FPL FUNCTIONS

The general objectives are to enable students to:

Receive, verify and process incoming data;

Prepare and conduct an appropriate and complete briefing.

	4.1 Process FPL and FPL associated messages**			
4.1.1	Explain all the items of a flight plan form.	2	Items and their content.	ICAO Doc 4444
4.1.2	State the cruising speeds of the most common types of aircraft.	1	Especially the most common local aircraft.	Local procedures
4.1.3	Decode FPL items.	3		ICAO Doc 4444
4.1.4	Encode FPL items.	3		ICAO Doc 4444
4.1.5	Verify all items of a flight plan.	3		ICAO Doc 4444;
4.1.6	Describe the procedures for addressing a flight plan.	2		ICAO Doc 7910;
4.1.7	Address a flight plan.	3		ICAO Doc 7910;
4.1.8	Apply the flight plan filing time procedures.	3	1hr, 3hr and national regional and local regulations, delays and earlier departures.	ICAO Annex 2; National AIP; ICAO Doc 7030;
4.1.9	Apply flight plan transmission procedures.	3	e.g. AFTN format, local procedures.	ICAO Doc 4444; ICAO Annex 10
4.1.10	List relevant CFMU limitations when filing a flight plan.	1	CIA, ANM, CRAM, AIM, SLOT, etc. RAD and ENV database.	
4.1.11	Describe the categories of ATS messages.	2	ATS or FPL.	ICAO Doc 4444
4.1.12	Differentiate the types of ATS messages and their designator.	2	ATS or FPL.	ICAO Doc 4444
4.1.13	Prepare flight plan associated messages.	3		ICAO Doc 4444
4.1.14	Address FPL associated messages.	3		ICAO Doc 4444
4.1.15	Apply flight plan associated messages transmission procedures.	3	AFTN format, local procedures.	ICAO Doc 4444; ICAO Annex 10
4.1.16	Prepare supplementary messages.	3		ICAO Doc 4444
4.1.17	Address supplementary messages.	3		ICAO Doc 4444
4.1.18	Apply supplementary messages transmission procedures.	3	AFTN format, local procedures.	ICAO Doc 4444; ICAO Annex 10
4.1.19	Describe methods of storage for a flight plan and ATS messages.	2	Manual or electronic.	Local procedures
4.1.20	Store flight plan and ATS messages.	3		Local procedures
4.1.21	Explain the purpose of a repetitive flight plan (RPL).	2		ICAO Doc 4444
4.1.22	Describe all the items contained in a RPL.	2		ICAO Doc 4444
4.1.23	Explain the collection, storage and processing of RPL data.	2	Manual or electronic.	ICAO Doc 4444; ICAO Annex 10;
4.1.24	Explain the implications for a flight plan with a special status.	2	STS/HOSP, Head of State, EXM833, etc.	

	4.2 Provide information for flight preparation**		
4.2.1	List the content of pre-flight information.	1	NOTAM, SNOW TAM, ASHTAM, NAT tracks, MET info, charts, ATFM messages, national publications.	
4.2.2	Explain the scope of the available briefing material.	2		
4.2.3	Appreciate the significance of a briefing for the customer.	2		
4.2.4	Locate the required information in the appropriate documentation.	3	AIP, AIC, Charts, etc.	
4.2.5	Retrieve required information from the data base.	3	VFR, IFR, national or international flight, etc.	
4.2.6	Communicate the required information to the customer using the appropriate technique.	3	Compile and print out, face to face, fax, phone, email, etc.	
4.2.7	Provide additional information on request.	3	Update service.	

	4.3 Accept post-flight information and transmit it to ATS/AIS**		
4.3.1	Accept post-flight information.	3	Incident/accident reports, landing information and general in-flight reports.	ICAO Annex 15; ICAO Doc 8126
4.3.2	Transmit post-flight information to ATS/AIS.	3		Local procedures

	4.4 Support incident investigation (ARO side)**		
4.4.1	Explain the procedures for the handling of an incident report form.	2		ICAO Doc 4444; ICAO Doc 9426; Local procedures; National AIP
4.4.2	Accept incident report forms.	3		Local procedures
4.4.3	Transmit the incident report forms to the appropriate authority.	3		Local procedures
4.4.4	Describe the procedures applicable in support of investigations.	2	Role of ARO in conjunction with other units and or police.	Local procedures
4.4.5	Apply the procedures applicable in support of investigations.	3		Local procedures

	4.5 Compile statistical data**		
4.5.1	List the type of statistical data required from ARO.	1		Local procedures

5. COORDINATION

The general objectives are to enable students to:
Identify when co-ordination has to be performed;
Conduct coordination in an appropriate manner.

	5.1 General*		
5.1.1	Explain the need for co-ordination.	2		
5.1.2	Explain the methods of coordination.	2	Face to face, phone, fax, email, internet, standardized procedures, language used, records/log sheet, etc.	Local procedures
5.1.3	Use appropriate coordination techniques.	3	Verbal, written etc.	Local procedures
5.1.4	Describe the interaction with other data systems.	2	Data links, EAD, pre-flight database, online applications etc.	Local procedures

	5.2 Co-ordinate with data sources*		
5.2.1	Clarify erroneous and/or ambiguous content with the source of the data.	3	SLA's	Local procedures;
5.2.2	Request missing elements.	3	SLA's	Local procedures

	5.3 Co-ordinate between AIS functions*		
5.3.1	Describe the principle functions within AIS.	2	AIS functions.	ICAO Doc 8126
5.3.2	Determine when/what to coordinate with other AIS functions.	3	AIS functions at local and adjacent units.	Local procedures

	5.4 Co-ordinate with customers**		
5.4.1	List the principle customers of an AIS unit.	1	AOs, private pilots, ATC, handling companies, other AIS units local/foreign etc.	ICAO Doc 8126
5.4.2	Characterize the customers of the AIS unit.	2	e.g. Professional, non-professional, frequent or infrequent user, etc.	
5.4.3	Describe co-ordination procedures with ATS units.	2	TW R, APP, ACC, FIC, SLA's.	Local procedures
5.4.4	Describe co-ordination procedures with other agencies/services.	2	MET, technical services, aircraft operators, CFMU, regulator, SLA's etc.	ICAO Doc 9377; Local procedures;
5.4.5	Communicate the required information to the customer.	3		Local procedures
5.4.6	Clarify the meaning of the information provided, if requested.	3		Local procedures
5.4.7	Provide any additional information if requested.	3		Local procedures

	5.5 Human factors aspects in co-ordination**		
5.5.1	State factors affecting the quality of communication.	1		ICAO Doc 9683
5.5.2	Identify communication and thinking patterns.	1		
5.5.3	Explain common behavioral patterns of customers.	2		
5.5.4	Select the appropriate way for dealing with customers.	3		
5.5.5	Apply the rules for concise communication.	3		
5.5.6	Demonstrate correct behavior in a conflict situation.	3		
5.5.7	Demonstrate correct handling of customer complaints.	3		