AIRCRAFT INSTRUMENTS II

	L	T	P
Hrs./Week	1	-	2

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
1.	Gyro Instruments	2	Identification removal and Fitment	6
2.	AC Compass	2	Removal and fitment	4
3.	Landing compass and Compass swinging	1	Compass swinging procedure	4
4.	Alerting and indicating Instruments	3	Testing and servicing of instruments	2
5.	Weather Radar	2		
6.	Air Data Bus	1	Identification of parameters And transducers for data Integration	2
7.	CVR, CDR and FDR	3	Data milking of FDR, Removal And fitment of FDR and CVR	6
8.	Auto Pilot and Automatic Control	2	Removal and fitment of automatic control components	4

COMPUTER APPLICATIONS II

	L	T	P
Hrs./Week	1	1	2

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
1.	Overview of computer application	2	Hand on practices	1
2.	Engineering computation and Simulation	2	Usage of computer in engineering application	2
3.	Real time measurement and control	2		
4.	Cad/Cam/Cae	7	Hand on practice in Auto CAD Drawings	18
5.	Data input and retrieval for Component inventory control	2	Practice in data	10
		31		15

TESTING AND MEASUREMENT

	L	T	P
Hrs./Week	2	1	1

RATIONALE

Persons working and doing maintenance job on and aircraft are often involved in carrying out recommended tests. Which require expertise in measurement techniques and data analysis. Knowledge of various measurement devices, their usage and date processing becomes important.

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
1.	Introduction to methods of Measurement : mean, median, mode.	1		
1.1	Fundamental methods of Measure-ment general instrument Terminology, conversion of Measuring unit from one system to Another	2		
1.2	Measurements and their accuracy, reliability, Sensitivity and reproducibility, calibration	2		
1.3	Data presentation: Discrete, histogram, Continuous	3	Draw histogram for a given set of measurements find mean mode and median.	2
2.	Analysis of experimental data Accuracy and precision	4	for time period of a pendulum find all pendulum find all precision	
3.	Measurements of following physical quantities.			
3.1	Displacement Mechanical, Electrical And optical systems	2	To find characteristics of a LVDT	2
3.2	Force and torque Mechanical, elastic, Cell, dynamometers	3	To determine characteristics of an electric motor using dynamometer	2
3.3	Pressure mechanical, Manometers, transducers, low and high Pressure measurements	3	Calibration of a pressure gauge	2
3.4	Temperature: thermo-mechanical Electrical calibration	4	Cooling characteristic using thermocouple	2
3.5	Strain strain-gauge Theory types calibration	4	Strain gauge measurements of deflection of beam	2
3.6	Flow velocity and flow rate: Mean velocity, pressure-probes and calibration, Orifice Nozzle, venturi and rota meters.	4	Performance of venturimeter	2

AIRCRAFT SYSTEM-II

	L	T	P
Hrs./Week	**4**	**-**	**2**

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
1.	Air conditioning System	16		
1.1	Concepts			
1.2	Need of air conditioning			
1.3	Study of schematic diagram of Typical air conditioning System		Demonstration of air conditioning system on the aircraft to trace out various items with Associated piping	6
1.4	Basic elements of air conditioning System			
-	Cold air unit			
-	Heat Ex changer			
-	Pressure control valves			
-	Temperature control valves			
-	water Extractor			
1.5	Hearing and ventilating systems			
2.	Pressurization system	14	Demonstration of pressurization System on the aircraft	6
2.1	Concepts			
2.2	Why pressurization? Pressurization			
2.3	Study of schematic Diagram of typical pressurization			
2.4	Basic elements of pressurization system			
-	Pressure controller			
-	Discharge valve			
3.	Fuel System	6		
3.1	Basic principle			
3.2	Study of schematic Diagram of a typical Diagram of a typical Fuel system		Study of the fuel system on the aircraft and to trace out various items associated with piping	6

3.3	Basic elements of fuel system			
-	Mechanical booster			
-	Valves			
-	Fuel content sensors and gauging			
4.	Electrical system (power generation) and Distribution			
4.1	Concepts			
-	AC system (Constant and fixed speed)			
-	DC System	24	Study of the AC and DC system on trace out various items with associated cables.	6
-	Inverters			
4.2	Study of schematic diagram of a typical			
-	AC system			
4.3	Study of schematic diagram of a typical DC system			
4.4	Basic elements of AC system			
-	AC generator			
-	Control and protection unit			
-	Indicating and warning devices			
4.5	Basic elements of DC system			
-	DC Generator control and Protection unit			
-	Battery and APU			
-	External power , GPU			
-	Indicating and warning devices			
5.	Miscellaneous systems	4		
5.1	Safety and Emergency	4		
-	Fire protection, Detection and extinguishing		Demonstration of the systems On aircraft	6
-	Oxygen system			
5.2	Escape system			
5.3	Aircraft furnishing			

MAINTENANCE CONCEPT AND PRACTICES-II

	L	T	P
Hrs./Week	**3**	**-**	**5**

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
1.	General repair Methods including Salvage methods	10		
1.1	Welding		Various methods of TIG/MIG Welding	12
1.2	Patching			
1.3	Riveting		Gluing and patching	
1.4	Gluing and plywood repair			
1.5	Plating			
1.6	Non-Destructive methods(NDT)			
2.	Methods	12		
2.1	Shop layout Conditions and services			
2.2	Task preparation and proving			
2.3	Task routine			
2.4	Material handling			
3.	Aircraft and its various Systems	20		
3.1	Assessing the physical condition of Airframe		Study of maintenance manual of any aircraft	10
3.2	Assessment of a repair as called for by Maintenance manual			
3.2.1	in Situation assessment of Condition of power plant		Study of maintenance manual of piston engine and jet engine	10
3.2.2	Removal of engine from airframe		Practice on assessment of engine Condition and its removal from airframe	8
3.3.2	Repair by replacement Of engine and salvage It system components		Practice on repair and salvage of engine and its components	8

4.	Hydraulic system pumps, Pipelines testing and repair	4	Repair and testing of hydraulic system	12
5.	Landing gear (LG)	1		
5.1	Assessment of condition Of various components of LG		identifying different types and its components	2
5.2	Rectify /Replace/Repair/ Adjustment of LG systems/its Components		practice on repair/ replacement and adjustment of LG system	8

ADVANCED AIRFRAME STRUCTURE-II

	L	T	P
Hrs./Week	**3**	**-**	**5**

RATIONALE

A Diploma holder must have knowledge about construction of aircraft structure i.e. fuselage, wings tailplane and empennage and other control surfaces. Hence this subject has been divided into week sections. The second section will be covered in 6th. Semester.

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
1.	Types of aircraft Construction	2	Demonstration of major aircraft structures	2
1.1	Metal construction			
1.2	Wooden Construction			
1.3	Composite construction			
2.	Various loads taken by Aircraft during flight	3	Load testing on universal testing machine	2
2.1	Compression; tension; Torsion; shear; bending			
3.	Construction of fuselages	10	Demonstration of Various fuselages	4
3.1	Truss type fuselage			
3.2	Mono coque and semi mono coque fuselage			
3.3	Terminology for fuselage			
4.	Construction and method of attachment Of wings	9	Demonstration of various main plane construction	4
4.1	Terminology relating to Wing construction			
4.2	Stressed skin construction			
4.3	Braced construction			
4.4	Geodetic construction			
5.	Construction of empennage	4	method of attachment	2
5.1	Construction of tail plane			
5.2	Construction of fin			

6	Construction and method Of attachment of primary Flying control surfaces	8	Demonstration and adjustment of control surfaces	5
6.1	Ailerons			
6.2	Elevators			
6.3	Rudder			
6.4	Rudder vators			
6.5	Elevons			
7.	Construction and method Of attachment of secondary And aircraft control surfaces	12	Demonstration of secondary and auxiliary control surfaces	8
7.1	Tabs			
7.2	Trim tabs			
7.3	Balance tabs			
7.4	Servo tabs			
7.5	Spring tabs			
7.6	Flaps		minor and major repair Of aircraft structure of metals, Fabric and wood	5
7.7	Slats and siots			
7.8	spoilers			
7.9	Airbrakes			

ADVANCED PROPULSION-GAS TURBINE ENGINE CONSTRUCTION

	L	T	P
Hrs./Week	**4**	**-**	**2**

RATIONALE

The diploma holder in aircraft maintenance must have required knowledge and skills about the construction and maintenance of gas turbine engine. Hence this subject has been divided into tow section. The second section will be covered in the 6th semester.

DETAILED CONTENTS

Sr. No.	Theory	Time (Hrs.)	Practical	Time (Hrs.)
GAS TURBINE ENGINE CONSTRUCTION				
1.	Definitions and terms Used in the gas turbine engine	2		
2.	Construction and operation of various Types of gas turbine engines such as Turbo fan, turbo prop and turbo shaft Jet engines.	2	Demonstration of working models of gas turbine engines	2
3.	Factors affecting the engine Performance	2		
4.	Principles of combustion	2		
5.	Gas turbine engines: Types . Function and construction Of each part, component and Accessories classify materials.	18	dismantling the engine parts. components and accessories and assembling	
6.	Compressor stall, surge and air bleed Control.	4		
7.	Noise suppressor, thrust reverser and Auxiliary power units	4		
8.	Turbine cooling, air oil systems, Flow mixing and air bleeding for Secondary systems	5		
9.	Fuels and oils, construction and Prevention	5		

SYSTEMS

10.	Gas turbine engine fuel Systems, including fuel control Unit other parts and components, Their construction and operation	4	Removing and installing the system parts and components
11.	lubrication systems various Types of gas turbine engines, its Parts and components, their Construction and operation	5	Removing and installing of the systems parts and component
12.	Starting system and types Of gas turbine engine starters	4	
13.	Gas turbine engine thrust augmentation Devices and systems such as water injection System, after burning system adjustable Propelling nozzle i.e. variable nozzle.		