

Course code	Course Name	L-T-P-Credits	Year of Introduction
AO403	AIRCRAFT SYSTEMS AND INSTRUMENTS	3-0--0-3	2016
Prerequisite : Nil			
Course Objectives			
<ul style="list-style-type: none"> To describe the principle and working of aircraft systems and instruments 			
Syllabus			
Hydraulic systems– pneumatic systems – Conventional Systems –engine control systems - push pull rod system – Modern control systems - Digital fly by wire systems - auto pilot system- Fuel systems – lubricating systems-starting and ignition systems			
Flight Instruments and Navigation Instruments – gauges - sensors			
Expected Outcome:			
The students will be able to			
<ol style="list-style-type: none"> understand about the hydraulic and pneumatic systems. know about various control systems and fuel systems. able to handle the various aircraft instruments. 			
Text Books:			
<ol style="list-style-type: none"> Mekinley, J.L. and Bent, R.D., “Aircraft Power Plants”, McGraw-Hill, 1993. Pallet, E.H.J., “Aircraft Instruments & Principles”, Pitman & Co., 1993. 			
References:			
<ol style="list-style-type: none"> Aviation Maintenance Technician Hand Book – Power plant Vol. I & II”, U.S. Dept. of Transportation, Federal Aviation Administration, The English Book Store, New Delhi. Treager, S., “Gas Turbine Technology”, McGraw-Hill, 1997. 			
Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Hydraulic systems – Study of typical workable systems – components – hydraulic systems controllers	1	15%
	modes of operation – pneumatic systems – working principles – typical pneumatic power system	1	
	brake system – components, landing gear systems – classification	2	
	shock absorbers – retractive mechanism.	2	
II	Conventional Systems – power assisted and fully powered flight controls	1	15%
	power actuated systems	3	
	engine control systems	2	
	push pull rod system – operating principles	4	
FIRST INTERNAL EXAM			

III	Modern control systems	2	15%
	Digital fly by wire systems	2	
	auto pilot system	2	
	active control technology	1	
IV	Fuel systems – piston and jet engines – components	1	15%
	multi-engine fuel systems,	2	
	lubricating systems piston and jet engines	2	
	starting and ignition systems	2	
SECOND INTERNAL EXAM			
V	Flight Instruments and Navigation Instruments – Pitot-Static system , Altimeters, Airspeed Indicator, Vertical Speed Indicator	3	20%
	Gyroscope – Gyroscopic properties ,Gyro Horizon Indicator Turn and Bank Indicator & Directional Gyroscope	3	
	Accelerometers, Mach Meters ,Direct Reading Magnetic Compass , Remote Reading Magnetic Compass.	3	
VI	Study of various types of engine instruments - Tachometers - Temperature gauges – Pressure gauges –	2	20%
	Types of Pressure ,Pressure sensing Elements, Oil pressure gauge	2	
	Manifold pressure gauge , Engine Pressure Ratio , Synchroscope.	2	
END SEMESTER EXAM			

Question Paper Pattern

Maximum marks: 100

Exam duration: 3 hours

The question paper shall consist of three parts

Part A

4 questions uniformly covering modules I and II. Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part B

4 questions uniformly covering modules III and IV. Each question carries 10 marks
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

Part C

6 questions uniformly covering modules V and VI. Each question carries 10 marks
Students will have to answer any four questions out of 6 (4X10 marks =40 marks)

Note: In all parts, each question can have a maximum of four sub questions, if needed.