

AIRCRAFT SYSTEMS AND INSTRUMENTS
PROFESSIONAL ELECTIVE - IV

VII Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5AE50	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES:								
The course should enable the students to:								
<ol style="list-style-type: none"> 1. Understand the aircraft control systems. 2. Understand the aircraft systems. 3. Acquire the knowledge of aircraft instruments 								
UNIT-I	AIRCRAFT SYSTEMS							
Hydraulic systems – Study of typical workable systems – components – hydraulic systems controllers – modes of operation – pneumatic systems – working principles – typical pneumatic power system – brake system – components, landing gear systems – classification – shock absorbers – retractable mechanism								
UNIT-II	AIRPLANE CONTROL SYSTEMS							
Conventional Systems – power assisted and fully powered flight controls – power actuated systems – engine control systems – push pull rod system – operating principles – modern control systems – digital fly by wire systems – auto pilot system, active control technology								
UNIT-III	ENGINE SYSTEMS							
Fuel systems – piston and jet engines – components – multi-engine fuel systems, lubricating systems – piston and jet engines – starting and ignition systems – piston and jet engines								
UNIT-IV	AIRCONDITIONING AND PRESSURIZING SYSTEM							
Basic air cycle systems – vapour cycle systems, boot-strap air cycle system – evaporative vapour cycle systems – evaporation air cycle systems – oxygen systems – fire protection systems, deicing and anti icing system								
UNIT-V	. AIRCRAFT INSTRUMENTS							
Flight instruments and navigation instruments – accelerometers, air speed indicators – mach meters – altimeters - gyroscopic instruments– principles and operation – study of various types of engine instruments – tachometers – temperature gauges – pressure gauge – operation and principles.								
Text Books:								
<ol style="list-style-type: none"> 1. Mekinley, J.L. and R.D. Bent, "Aircraft Power Plants", McGraw Hill 1993. 2. Pallet, E.H.J, "Aircraft Instruments & Principles", Pitman & Co 1993. 								
Reference Books:								
<ol style="list-style-type: none"> 1. Treager, S., "Gas Turbine Technology", McGraw Hill 1997. 2. Mckinley, J.L. and Bent R.D. "Aircraft Maintenance & Repair", McGraw Hill, 1993. 3. Handbooks of Airframe and Power plant Mechanics, US dept. of Transportation, Federal, Aviation Administration, The English Book Store, New Delhi, 1995 								

COURSE OUTCOMES:

At the end of the course the student should be able to:

1. Compare the features of various flight control systems
2. Describe the principle and working of different aircraft systems
3. Analyze the performance of various aircraft engine systems.
4. Acquire and interpret data from various aircraft instruments.
5. Identify the various cockpit controls.