

AIRFRAME MAINTENANCE AND REPAIR
PROFESSIONAL ELECTIVE - IV

VII Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5AE49	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
<p>COURSE OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> Understand the nature of airframe structural component inspection, corrosion repair and non-destructive inspection Understand aircraft component disassembly, reassembly and troubleshooting. 								
UNIT-I	MAINTENANCE OF AIRCRAFT							
Rules and Regulations for Civil Aviation in India, Indian aircraft rules, Civil aviation requirement, CAR 66, Aircraft System, Ensuring quality welds - Welding jigs and fixtures - Soldering and brazing – laser welding. Sheet metal repair and maintenance: Selection of materials; Tools - power/hand; Repair techniques; Peening - Close tolerance fasteners; Sealing compounds; forming/shaping; Calculation of weight of completed repair; Effect of weight - change on surrounding structure. Sheet metal inspection - N.D.T. Testing. Riveted repair design - Damage investigation - Reverse engineering.								
UNIT-II	PLASTICS AND COMPOSITES IN AIRCRAFT							
Review of types of plastics used in airplanes - Maintenance and repair of plastic components - Repair of cracks and holes - various repairs schemes - Scopes. Cleaning of fibre reinforced plastic (FRP) materials prior to repair; Break test - Repair Schemes; FRP/honeycomb sandwich materials; laminated FRP structural members and skin panels; Tools/equipment; Vacuum-bag process. Special precautions – Autoclaves								
UNIT-III	AIRCRAFT JACKING, ASSEMBLY AND RIGGING							
Airplane jacking and weighing and C.G. Location. Balancing of control surfaces - Inspection maintenance. Helicopter flight controls. Tracking and balancing of main rotor. Aircraft Electrical System, Inspection of Aircraft and Basic Aircraft Design.								
UNIT-IV	REVIEW OF HYDRAULIC AND PNEUMATIC SYSTEM							
Trouble shooting and maintenance practices - Service and inspection - Inspection and maintenance of landing gear systems. Aircraft Fuel System, Aircraft Wheels, Aircraft Brakes System- Inspection and maintenance of air-conditioning and pressurization system, water and waste system. Installation and maintenance of Instruments - handling - Testing - Inspection. Inspection and maintenance of auxiliary systems - Rain removal system - Position and warning system - Auxiliary Power Units (APUs).								
UNIT-V	SAFETY PRACTICES							
Hazardous materials storage and handling, Aircraft furnishing practices - Equipments. Trouble shooting. Theory and practices. Maintenance Schedule, inspection of cessna 206.								
Text Books:								

1. Kroes, Watkins, Delp, "Aircraft Maintenance and Repair", McGraw Hill, New York, 1992

Reference Books:

1. Brimm D.J. Bogges H.E., "Aircraft Maintenance", Pitman Publishing corp., New York, 1940.
2. Delp. Bent and Mckinely "Aircraft Maintenance Repair", McGraw Hill, New York, 1987.
- 3 Larry Reithmeir, "Aircraft Repair Manual", Palamar Books, Marquette, 1992.

COURSE OUTCOMES:

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

- Identify and apply the principles of function and safe operation to aircraft as per FAA
- Understand general airframe structural repairs, the structural repair manual and structural control programme.
- Know about aircraft adhesives, sealants, bonding techniques, repair procedures and the types and detection of defects in aircraft composite materials
- Identify, install, inspect, fabricate and repair aircraft sheet metal and synthetic, material structures.