

AERO ENGINE REPAIR AND MAINTENANCE
PROFESSIONAL ELECTIVE - IV

VII Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5AE52	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	30	70	100
COURSE OBJECTIVES								
<p>The purpose of this subject is to provide the students with the theoretical background and engineering applications.</p> <ol style="list-style-type: none"> To understand the basic concepts of the maintenance and repair of both piston and jet engines To acquire the knowledge of inspection and overhaul of both piston and jet engines. 								
UNIT-I	CLASSIFICATION OF PISTON ENGINE COMPONENTS							
Types of piston engines – Principles of operation – Function of components – Materials used – Details of starting the engines – Details of carburetion and injection systems for small and large engines – Ignition system components – Spark plug details – Engine operating conditions at various altitudes – Maintenance and inspection check to be carried out.								
UNIT-II	INSPECTIONS OF PISTON ENGINES							
Inspection, maintenance and troubleshooting – Inspection of all engine components – Daily and routine checks – Overhaul procedures – Compression testing of cylinders – Special inspection schedules – Engine fuel, control and exhaust systems – Engine mount and super charger – Checks and inspection procedures.								
UNIT-III	INSPECTION METHODS							
Symptoms of failure – Fault diagnostics – Case studies of different engine systems – Tools and equipment requirements for various checks and alignment during overhauling – Tools for inspection – Tools for safety and for visual inspection – Methods and instruments for non destructive testing techniques – Equipment for replacement of part and their repair. Engine testing: Engine testing procedures and schedule preparation – Online maintenance.								
UNIT-IV	CLASSIFICATION OF JET ENGINE COMPONENTS							
Types of jet engines – Principles of operation – Functions of components – Materials used – Details of starting and operating procedures – Gas turbine engine inspection & checks – Use of instruments for online maintenance – Special inspection procedures : Foreign Object Damage – Blade damage – Maintenance procedures of gas turbine engines – Trouble shooting and rectification procedures – Component maintenance procedures – Systems maintenance procedures. Gas turbine testing procedures – Test schedule preparation – Storage of Engines – Preservation and de-preservation procedures.								
UNIT-V	OVERHAUL PROCEDURES							
Engine Overhaul procedures – Inspections and cleaning of components – Repairs schedules for overhaul – Balancing of gas turbine components.								
Trouble Shooting - Procedures for rectification – Condition monitoring of the engine on ground and at altitude – engine health monitoring and corrective methods.								

Text Books:

1. Kroes & Wild," Aircraft Power plants ", 7th Edition – McGraw Hill, New York, 1994.

Reference Books:

1. Turbomeca," Gas Turbine Engines ", The English Book Store ", New Delhi, 1993.
2. United Technologies' Pratt & Whitney, "The Aircraft Gas turbine Engine and its Operation", The English Book Store, New Delhi.

COURSE OUTCOMES:

At the end of the course the students are able to:

1. Classify types of piston engine and their components
2. Explain briefly about maintenance and troubleshooting
3. Identify major checks during overhauling
4. Categorize major maintenance procedures of gas turbine engines
5. Estimate the troubleshooting procedures for rectification