GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

AIRCRAFT MAINTENANCE-I
(Code : 3350102**)**

Diploma Programme in which this course is offered	Semester in which offered
Aeronautical Engineering	Fifth

1. RATIONALE

The main objective of this course is to understand the maintenance of aircraft components & systems. This subject addresses the understanding and maintenance of aircraft systems, structural components and engines.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with an aim to develop maintenance skills leading to the achievement of the following competencies:

- → **To understand the maintenance of aircraft system, structural components and engines.**
- → **To study about detailed procedure of maintenance and repairs.**

3. TEACHING AND EXAMINATION SCHEME.

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	**150**
03	00	02	05	70	30	20	30	

Legends: **L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** -Practical; **C** – Credit, **ESE** - End Semester Examination; **PA** - Progressive Assessment.

4. DETAILED COURSE CONTENTS

Unit	Major Learning Topics and Sub-topics	Outcomes (in cognitive domain)
UNIT– I INTRODUCTION	• Purpose of Maintenance • Role of Engineer & Mechanic	1.1 Why do we have to do maintenance? 1.2 The role of an Engineer 1.3 The role of a Mechanic 1.4 Nomenclature & definition of Aircraft. 1.5 Basic types of maintenance

UNIT– II FABRICATION & REPAIR OF WOOD STRUCTURE	• To Study about woods & its properties. • To study about fabrication of aircraft woods. • To study about repair of aircraft woods.	2.1 Introduction 2.2 Aircraft Woods 2.3 Adhesives and Bonding Procedures 2.4 Construction and Repair of Wood Structures 2.5 Care of aircraft with Wood structures 2.6 Inspection of airplanes having wood structures
UNIT– III WELDED AIRCRAFT STRUCTURES AND REPAIR	• To study about welded aircraft structure • To study about repair of welded aircraft structure.	3.1Construction of Steel-Tube Assemblies by Welding 3.2 Inspection of Steel-Tube Structures 3.3 Aircraft Tubing Repair 3.4 Special Welding Repairs 3.5 Soldering and Brazing
UNIT– IV SHEET-METAL INSPECTION AND REPAIR	• To study about sheet metal inspection & repair procedures. • To study about rivet repair & maintenance.	4.1 Introduction 4.2 Sheet-metal inspection 4.3 Sheet-metal repair 4.4 Repair practices 4.5 Rivet-repair design
UNIT– V AIRCRAFT ENGINE INSPECTION & MAINTENANCE	• To study about Reciprocating engine of an aircraft • To study about inspection, overhaul & cleaning of an aircraft engine.	5.1 Introduction to reciprocating engine of an aircraft. 5.2 Reciprocating engine overhaul 5.3 Inspection process 5.4 NDT inspection methods. 5.5 Cleaning 5.6 Dimensional inspection 5.7 Reassembly 5.8 Installation & Testing 5.9 Engine troubleshooting

5. SUGGESTED SPECIFICATION TABLE WITH HOURS AND MARKS (THEORY).

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	INTRODUCTION	04	04	02	02	08
II	FABRICATION & REPAIR OF WOOD STRUCTURE	06	04	06	04	14
III	WELDED AIRCRAFT STRUCTURE AND REPAIR	07	06	04	04	14
IV	SHEET-METAL INSPECTION AND REPAIR	07	04	06	04	14
V	AIRCRAFT ENGINE INSPECTION & MAINTENANCE	08	06	08	06	20
TOTAL		32	20	22	28	70

Legends: **R** = Remember **U**= Understand; **A**= Apply and above levels (Bloom's revised taxonomy)

6. SUGGESTED LIST OF EXERCISES/PRACTICALS.

The practical exercises should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the above mentioned competencies.

SR. NO.	UNIT NO.	EXPERIMENT	HOURS
1	V	To study about need of nondestructive testing (ndt).	2
2	V	To perform visual test for given sample using visual aid.	2
3	V	To perform dye/liquid penetration test.	2
4	V	To study and perform ultrasonic test.	2
5	V	To study and perform magnetic particle test.	2
6	V	To study of eddy current test.	2
7	V	To study of x-ray test.	2
8	V	To perform engine overhauling & cleaning.	4

7. SUGGESTED LIST OF STUDENT ACTIVITIES.

Following is the list of proposed student activities like:

SR.NO.	ACTIVITY
1	Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and experiment work.
2	Prepare a chart of engine overhaul procedures.

8. SUGGESTED LEARNING RESOURCES.

A. List of Books:

SR. NO.	TITLE OF BOOK	AUTHOR	PUBLICATION
1.	Aircraft maintenance & repair	Michael j. kores	Mc Graw Hill Publication
2.	Aviation Maintenance Technician Handbook–Powerplant	U.S. Department of Transportation	Federal Aviation Administration
3.	Aviation Maintenance Management	Harry Kinnison, Tariq Siddiqui	Mc Graw Hill Publication

B. List of Software/Learning Websites

a. https://www.youtube.com/watch?v=pjLoM9bjWSo

b. https://www.youtube.com/watch?v=BZa-ZP121c8

c. https://www.youtube.com/watch?v=Sd3sw0OppWM

d. https://www.youtube.com/watch?v=eiFt8LuyIr4

e. https://www.youtube.com/watch?v=y2jo6xBc4VU

f.https://www.youtube.com/watch?v=lp8xVN80H4&list=PLXMBJ899tuooWKXhUvDGC57RLcx0CseGs

g. https://www.youtube.com/watch?v=FjVGGbR9sPw

h. https://www.youtube.com/watch?v=IGuv4D8JISc

i. https://www.youtube.com/watch?v=z5ud1UCrB3g

j. https://www.youtube.com/watch?v=ln2m6kKD104

k. https://www.youtube.com/watch?v=MI8UY6gXFWQ

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnic.

- **Prof.Ankit Patel**, H.O.D., Aeronautical Dept. Parul institute of Engg. & tech-Diploma studies

Faculty Members from Engineering

- **Dr.Diplali Thakkar**, H.O.D., Aeronautical Engineering Dept. SVIT, Vasad

Coordinator and Faculty Members from NITTTR Bhopal.