GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

AIRCRAFT INSTRUMENTS
(Code : 3330104)

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

1. RATIONALE

The main objective of this course is to understand the working of the aircraft instruments. This subject addresses the pitot-static system and associated instruments, the vacuum system and related instruments, gyroscopic instruments, and the magnetic compass. When a pilot understands how each instrument works and recognizes when an instrument is malfunctioning.

2. LIST OF COMPETENCIES

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

→ **To study about different instrument used in aircraft.**

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
04	01	00	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	• Classification of aircraft instruments.	1.1 Introduction 1.2 Classifying Instruments
UNIT– II FLIGHT INSTRUMENTS	• Study the pitot static instruments.	2.1 Pitot Static System 2.2 Air Speed Indicator 2.3 Vertical Speed Indicator 2.4 Altimeter
UNIT– III GYRO INSTRUMENTS	• To study about gyro instruments	3.1 Attitude Indicator 3.2 Directional Gyro Indicator 3.3 Turn Coordinator 3.4 Turn and Slip Indicator. 3.5 Heading Indicator
UNIT– IV ENGINE INSTRUMENTS	• To study about different engine instruments used in aircrafts.	4.1 Tachometer 4.2 Engine Pressure Ratio Indicator 4.3 Cylinder head Temperature gauge 4.4 Manifold Pressure gauge 4.5 Exhaust Temperature Gauge 4.6 Fuel Flow Indicator
UNIT– V CONTROL INDICATORS	• To study the control indicators.	5 1. Flap Position Indicator. 5.2 Trim position Indicator.

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	06	03	03	04	10
II	PITOT STATIC SYSTEM AND FLIGHT INSTRUMENTS	12	05	07	08	20
III	GYRO INSTRUMENTS	12	06	04	06	16
IV	ENGINE INSTRUMENTS	12	04	04	08	16
V	CONTROL INDICATORS	06	02	02	04	08
TOTAL		48	20	20	30	70

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

6. SUGGESTED LIST OF EXERCISES/PRACTICALS.

The tutorial 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
1	I	Introduction of aircraft Instruments.
2	II	To study about Pitot static system and flight instruments.
3	III	To study about Gyro Instruments.
4	IV	To study about Engine Instruments.
5	V	To study about Control Indicators.

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 tutorial work.

2 Prepare a charts & thermocouple model of aircraft instruments.

8. SUGGESTED LEARNING RESOURCES.

A. List of Books:

SR. NO.	TITLE OF BOOK	AUTHOR	PUBLICATION
1.	Aircraft Instrumentation and Systems	By S. Nagabhushana	I K International publishing house
2.	Aircraft Instruments	Pallett	Pearson

B. List of Software/Learning Websites

a. https://www.youtube.com/watch?v=sYPIJ8Vz-FI&hd=1

b. https://www.youtube.com/watch?v=HM7ZMPpbeDA&hd=1

c. https://www.youtube.com/watch?v=lyyc_CurfUs&hd=1

d.https://www.youtube.com/watch?v=r6nKaurUAwg&hd=1

e.https://www.youtube.com/watch?v=AtCJllRzxks&hd=1

f.https://www.youtube.com/watch?v=ERP2nKgWpxk&hd=1

g. https://www.youtube.com/watch?v=T7VsqMkYmcg&hd=1

h. https://www.youtube.com/watch?v=5iXVaNUj_IY&hd=1

i.https://www.youtube.com/watch?v=HM7ZMPpbeDA&list=PLbFy_l4F1SlC4xQAKBSSrlXV3GsfOFPWA&hd=1

j.https://www.youtube.com/watch?v=ERP2nKgWpxk&ebc=ANyPxKrhwj2JkadfJP2gymu0cWoFIYlki9e9AecYSp_U0HDLeZ_mZNaYSs846DWYKxahKPqtnJj_Nmhra29X31yyEUQMfpJD8A
k. https://www.youtube.com/watch?v=y1AyhVfV3pQ&hd=1
l. https://www.youtube.com/watch?v=dsCt88b5lwI&hd=1
m. https://www.youtube.com/watch?v=8il794p8YdI&hd=1
n. https://www.youtube.com/watch?v=JnKloSdUJLo&hd=1
o. https://www.youtube.com/watch?v=AOZgRLj571I&hd=1
p. https://www.youtube.com/watch?v=HahloQh716Q&hd=1
q. https://www.youtube.com/watch?v=_-cA-AxUIwY&hd=1
r. https://www.youtube.com/watch?v=DDZcc0TAkJc&hd=1
s. https://www.youtube.com/watch?v=ujABHLuut4U&hd=1
t. https://www.youtube.com/watch?v=yWxuLY4R60E&hd=1
u. https://www.youtube.com/watch?v=yWxuLY4R60E&hd=1
v.https://www.youtube.com/watch?v=DTELj_0skKg&ebc=ANyPxKqqSYglutIm5tTx_S6qvYl4IvWxl2NGebkC5ZEevkXWjdPoFLzht5Fqkj-kSJsjV1qZ4LU9r0E50Jmrl8R05S31OkoZ1w
x. https://www.youtube.com/watch?v=DTELj_0skKg&hd=1
y. https://www.youtube.com/watch?v=ZI2imEgGDlM&hd=1
z. https://www.youtube.com/watch?v=CqgDotThFKE&hd=1

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics.

- **PROF.ANKIT PATEL**, H.O.D., Aeronautical Dept. Parul institute of engg. & tech-Diploma studies