COURSE CODE	COURSE TITLE	L	T	P	C
1151AE325	FLIGHT MECHANICS AND CONTROL LABORATORY	0	0	2	1

Course Category:
Programme core

a. Preamble:
This course teaches the student about how a system behaves for an external input and how the system could be controlled to obtain a desired response. This course also gives the students to understand the how the Aircraft behaviour changes depending on change in the aircraft's derivatives. Students get a chance to learn about and design flight control system and get hands on experience of the hardware used in flight testing.

b. Pre-requisites:
- Linear system Analysis and Control
- Airplane Performance

c. Links to other courses:
- Nil

d. Course educational Objectives:
Students undergoing this course are expected:
- To understand the system behaviour and the control techniques
- To familiarize aircraft behaviour with respect to the aerodynamic control and stability derivatives

e. Course Outcomes:
On successful completion of this course students will be able to

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Estimate the system response	K4,S3
CO2	Forecast the actual flight behavior from the numerical parameters	K4,S3
CO3	Estimate the flight parameters	K4,S3
CO4	Design flight control law	K4,S3
CO5	Calibrate and read sensor data	K3,S3

(S1-Factual,S2-Conceptual,S3-Procedural,S4-Metacognitive)

f. CORRELATION OF COS WITH PROGRAMME OUTCOMES:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**H**	**H**		**H**	**L**	**H**	**H**	**H**	**L**	**H**		
CO2	**H**	**H**		**H**	**L**	**H**	**H**	**H**	**L**	**H**		
CO3	**H**	**H**		**H**	**L**	**H**	**H**	**H**	**L**	**H**		
CO4	**H**	**H**		**H**	**L**	**H**	**H**	**H**	**L**	**H**		
CO5	**H**	**H**		**H**	**L**	**H**	**H**	**H**	**L**	**H**		

H- High; M-Medium; L-Low

g. List of experiments:

1. Determine the Closed loop time response for the given transfer function by Root locus technique
2. Design a PID control for the given transfer function and performance requirements
3. Simulate the longitudinal flight dynamics for the given Aircraft parameters
4. Design a Simple Altitude-hold Autopilot system for the given flight model
5. Calibrate the given Load cell.
6. Lab Project

Total Periods: 30