SEMESTER V

S. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	AE3501	Aircraft Structures-II	PCC	3	0	0	3	3
2.	AE3502	Aerodynamics II	PCC	3	0	0	3	3
3.		Professional Elective I	PEC	-	-	-	-	3
4.		Professional Elective II	PEC	-	-	-	-	3
5.		Professional Elective III	PEC	-	-	-	-	3
6.		Mandatory Course-I[&]	MC	3	0	0	3	0
PRACTICALS								
7.	AE3511	Aircraft Structures Laboratory	PCC	0	0	4	4	2
8.	AE3581	CAD Laboratory	PCC	0	0	4	4	2
			TOTAL	-	-	-	-	**19**

[&] Mandatory Course-I is a Non-credit Course (Student shall select one course from the list given under MC- I)

SEMESTER VI

S. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	AE3691	Flight Dynamics	PCC	3	1	0	4	4
2.	AE3601	Aircraft Design	PCC	3	0	0	3	3
3.		Open Elective – I*	OEC	3	0	0	3	3
4.		Professional Elective IV	PEC	-	-	-	-	3
5.		Professional Elective V	PEC	-	-	-	-	3
6.		Professional Elective VI	PEC	-	-	-	-	3
7.		Mandatory Course-II[&]	MC	3	0	0	3	0
8.		NCC Credit Course Level 3[#]		3	0	0	3	3
PRACTICALS								
9.	AE3611	Aircraft Design Project	PCC	0	0	4	4	2
10.	AE3612	Flight Training / Flight Simulation Laboratory	PCC	0	0	4	4	2
			TOTAL	-	-	-	-	**23**

***Open Elective – I shall be chosen from the emerging technologies.**

[&] Mandatory Course-II is a Non-credit Course (Student shall select one course from the list given under MC- II)

[#] NCC Credit Course level 3 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA

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MANDATORY COURSES I

S. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	MX3081	Introduction to Women and Gender Studies	MC	3	0	0	3	0
2.	MX3082	Elements of Literature	MC	3	0	0	3	0
3.	MX3083	Film Appreciation	MC	3	0	0	3	0
4.	MX3084	Disaster Risk Reduction and Management	MC	3	0	0	3	0

MANDATORY COURSES II

S. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	MX3085	Well Being with Traditional Practices - Yoga, Ayurveda and Siddha	MC	3	0	0	3	0
2.	MX3086	History of Science and Technology in India	MC	3	0	0	3	0
3.	MX3087	Political and Economic Thought for a Humane Society	MC	3	0	0	3	0
4.	MX3088	State, Nation Building and Politics in India	MC	3	0	0	3	0
5.	MX3089	Industrial Safety	MC	3	0	0	3	0

ELECTIVE – MANAGEMENT COURSES

SL. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	GE3751	Principles of Management	HSMC	3	0	0	3	3
2.	GE3752	Total Quality Management	HSMC	3	0	0	3	3
3.	GE3753	Engineering Economics and Financial Accounting	HSMC	3	0	0	3	3
4.	GE3754	Human Resource Management	HSMC	3	0	0	3	3
5.	GE3755	Knowledge Management	HSMC	3	0	0	3	3
6.	GE3792	Industrial Management	HSMC	3	0	0	3	3

VERTICAL 4: AVIONICS AND DRONE TECHNOLOGY

Sl. No.	Course code	Course title	Category	Periods Per week			Total contact periods	Credits
				L	T	P		
1.	CAE347	Avionics	PEC	3	0	0	3	3
2.	CAE348	Control Engineering	PEC	3	0	0	3	3
3.	CAE349	Guidance and Control	PEC	3	0	0	3	3
4.	CAE350	Navigation and Communication System	PEC	3	0	0	3	3
5.	CAE351	Design of UAV Systems	PEC	3	0	0	3	3
6.	CAE352	Aerodynamics of Drones	PEC	3	0	0	3	3

VERTICAL5: AIRCRAFT MAINTENANCE

Sl. No.	Course Code	Course title	Category	Periods Per week			Total contact periods	Credits
				L	T	P		
1.	AE3001	Airframe Maintenance and Repair	PEC	3	0	0	3	3
2.	AE3002	Aircraft General Engineering and Maintenance Practices	PEC	3	0	0	3	3
3.	AE3003	Civil Aviation Regulations	PEC	3	0	0	3	3
4.	AE3004	Aircraft Engine Maintenance and Repair	PEC	3	0	0	3	3
5.	AE3010	Air Traffic Control	PEC	3	0	0	3	3
6.	AE3005	Airport Management	PEC	3	0	0	3	3

VERTICAL 6: DIVERSIFIED COURSES GROUP 1

Sl. No.	Course Code	Course title	Category	Periods Per week			Total Contact Periods	Credits
				L	T	P		
1.	AE3006	Design of Gas Turbine Engine Components	PEC	3	0	0	3	3
2.	AE3007	Vibration and Aero Elasticity	PEC	3	0	0	3	3
3.	ME3393	Manufacturing Processes	PEC	3	0	0	3	3
4.	CAE353	Turbo Machines	PEC	3	0	0	3	3
5.	AE3008	Helicopter Theory	PEC	3	0	0	3	3
6.	CAE354	Smart Materials and Structures	PEC	3	0	0	3	3

VERTICAL 7: DIVERSIFIED COURSES GROUP 2

Sl. No.	Course code	Course title	Category	Periods Per week			Total Contact Periods	Credits
				L	T	P		
1.	CAE355	Boundary Layer Theory	PEC	3	0	0	3	3
2.	CAE356	Theory of Elasticity	PEC	3	0	0	3	3
3.	CAE357	Structural Dynamics	PEC	3	0	0	3	3
4.	CAE358	Heat Transfer	PEC	3	0	0	3	3
5.	AE3009	Aeroelasticity	PEC	3	0	0	3	3
6.	CME393	Advanced Vehicle Engineering	PEC	3	0	0	3	3

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OPEN ELECTIVES

(Students shall choose the open elective courses, such that the course contents are not similar to any other course contents/title under other course categories).

OPEN ELECTIVE I AND II

(EMERGING TECHNOLOGIES)

To be offered other than Faculty of Information and Communication Engineering

SL. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	OCS351	Artificial Intelligence and Machine Learning Fundamentals	OEC	2	0	2	4	3
2.	OCS352	IoT Concepts and Applications	OEC	2	0	2	4	3
3.	OCS353	Data Science Fundamentals	OEC	2	0	2	4	3
4.	CCS333	Augmented Reality /Virtual Reality	OEC	2	0	2	4	3

OPEN ELECTIVES – III

SL. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	OHS351	English for Competitive Examinations	OEC	3	0	0	3	3
2.	OMG352	NGOs and Sustainable Development	OEC	3	0	0	3	3
3.	OMG353	Democracy and Good Governance	OEC	3	0	0	3	3
4.	OCE353	Lean Concepts, Tools And Practices	OEC	3	0	0	3	3
5.	CME365	Renewable Energy Technologies	OEC	3	0	0	3	3
6.	OME354	Applied Design Thinking	OEC	3	0	0	3	3
7.	MF3003	Reverse Engineering	OEC	3	0	0	3	3
8.	OPR351	Sustainable Manufacturing	OEC	3	0	0	3	3
9.	AU3791	Electric and Hybrid Vehicles	OEC	3	0	0	3	3
10.	OAS352	Space Engineering	OEC	3	0	0	3	3
11.	OIM351	Industrial Management	OEC	3	0	0	3	3
12.	OIE354	Quality Engineering	OEC	3	0	0	3	3
13.	OSF351	Fire Safety Engineering	OEC	3	0	0	3	3
14.	OML351	Introduction to non-destructive testing	OEC	3	0	0	3	3
15.	OMR351	Mechatronics	OEC	3	0	0	3	3
16.	ORA351	Foundation of Robotics	OEC	3	0	0	3	3
17.	OGI351	Remote Sensing Concepts	OEC	3	0	0	3	3
18.	OAI351	Urban Agriculture	OEC	3	0	0	3	3
19.	OEN351	Drinking Water Supply and Treatment	OEC	3	0	0	3	3
20.	OEE352	Electric Vehicle technology	OEC	3	0	0	3	3
21.	OEI353	Introduction to PLC Programming	OEC	3	0	0	3	3
22.	OCH351	Nano Technology	OEC	3	0	0	3	3
23.	OCH352	Functional Materials	OEC	3	0	0	3	3

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AE3691 **FLIGHT DYNAMICS** **L T P C**
3 1 0 4

COURSE OBJECTIVE:

- Know about the forces and moments that are acting on an aircraft, the different types of drag, drag polar, ISA, variation of thrust, power, SFC with velocity and altitude.
- Have understanding about performance in level flight, minimum drag and power required, climbing, gliding and turning flight, v-n diagram and load factor.
- Knowledge about degrees of stability, stick fixed and stick free stability, stability criteria, effect of fuselage and CG location, stick forces, aerodynamic balancing.
- Understanding about lateral control, rolling and yawing moments, static directional stability, rudder and aileron control requirements and rudder lock.
- Understanding about dynamic longitudinal stability, stability derivatives, modes and stability criterion, lateral and directional dynamic stability.

UNIT I CRUISING FLIGHT PERFORMANCE **9+6**

Forces and moments acting on a flight vehicle - Equation of motion of a rigid flight vehicle - Different types of drag –estimation of parasite drag co-efficient by proper area method- Drag polar of vehicles from low speed to high speeds - Variation of thrust, power with velocity and altitudes for air breathing engines . Performance of airplane in level flight - Power available and power required curves. Maximum speed in level flight - Conditions for minimum drag and power required

UNIT II MANOEUVERING FLIGHT PERFORMANCE **9+6**

Range and endurance - Climbing and gliding flight (Maximum rate of climb and steepest angle of climb, minimum rate of sink and shallowest angle of glide) – Takeoff and landing - Turning performance (Turning rate turn radius). Bank angle and load factor – limitations on turn - V-n diagram and load factor.

UNIT III STATIC LONGITUDINAL STABILITY **9+6**

Degree of freedom of rigid bodies in space - Static and dynamic stability - Purpose of controls in airplanes -Inherently stable and marginal stable airplanes – Static, Longitudinal stability - Stick fixed stability - Basic equilibrium equation - Stability criterion - Effects of fuselage and nacelle - Influence of CG location - Power effects - Stick fixed neutral point - Stick free stability-Hinge moment coefficient - Stick free neutral points-Symmetric maneuvers - Stick force gradients - Stick force per 'g' - Aerodynamic balancing.

UNIT IV LATERAL AND DIRECTIONAL STABILITY **9+6**

Dihedral effect - Lateral control - Coupling between rolling and yawing moments - Adverse yaw effects - Aileron reversal - Static directional stability - Weather cocking effect - Rudder requirements - One engine inoperative condition - Rudder lock.

UNIT V DYNAMIC STABILITY **9+6**

Introduction to dynamic longitudinal stability: - Modes of stability, effect of freeing the stick - Brief description of lateral and directional. dynamic stability - Spiral, divergence, Dutch roll, auto rotation and spin.

TOTAL: 75 PERIODS

COURSE OUTCOMES:

On successful completion of this course, the student will be able to

CO1: Build an understanding about forces & moments of an aircraft, types of drag, drag polar, and performance in level flight

CO2: Develop an understanding about basic maneuvering performance (range, endurance, climbing, gliding & turning flight), v-n diagram and load factor.

CO3: Build knowledge about degrees of stability, stick fixed & stick free stability, stability criteria, effect of fuselage & CG location, stick forces, aerodynamic balancing.

CO4: Explanation about lateral control, rolling & yawing moments, static directional stability, rudder & aileron control requirements and rudder lock.

CO5: Illustration about dynamic longitudinal stability, stability derivatives, modes & stability criterion, lateral and directional dynamic stability.

TEXT BOOKS:

1. Mc Cornick. W., “Aerodynamics, Aeronautics and Flight Mechanics”, John Wiley, NY, 1979.
2. Nelson, R.C. “Flight Stability and Automatic Control”, McGraw-Hill Book Co., 2004.
3. Perkins, C.D., and Hage, R.E., “Airplane Performance stability and Control”, John Wiley &Son:, Inc, NY, 1988.

REFERENCES :

1. Babister, A.W., “Aircraft Dynamic Stability and Response”, Pergamon Press, Oxford, 1980.
2. Dommasch, D.O., Sherby, S.S., and Connolly, T.F., “Aeroplane Aero dynamics”, Third Edition, Issac Pitman, London, 1981.
3. Etkin, B., “Dynamics of Flight Stability and Control”, Edn. 2, John Wiley, NY, 1982.
4. Mc Cornick B. W, “Aerodynamics, Aeronautics and Flight Mechanics”, John Wiley, NY, 1995.

MAPPING OF COS AND POS:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	1	2	1	1	3	1	1	2	2	3	2	2
CO2	3	3	2	1	2	1	1	3	1	1	2	2	3	2	2
CO3	3	2	1	-	1	-	-	2	-	-	1	1	2	1	1
CO4	3	2	1	-	1	-	-	2	-	-	1	1	2	1	1
CO5	3	3	2	1	2	1	-	2	1	1	2	2	2	2	2
Avg	3	2.6	1.6	1	1.6	1	1	2.4	1	1	1.6	1.6	2.4	1.6	1.6

AE3601	AIRCRAFT DESIGN	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

- To understand the purpose and scope of aircraft design
- To provide the student to understand the layout of procedure for evaluation of the aircraft design.
- To make the student to understand the importance of fixing of power plant location.
- To make the student to understand the choice of the selection of design parameters.
- Fixing the geometry and to investigate the performance and stability characteristics of airplanes.

UNIT I INTRODUCTION 9

State of art in airplane design, Purpose and scope of airplane design, Classification of airplanes based on purpose and configuration. Factors affecting configuration, Merits of different plane layouts. Stages in Airplane design. Designing for manufacturability, Maintenance, Operational costs, Interactive designs.

UNIT II PRELIMINARY DESIGN PROCEDURE 9

Data collection and 3-view drawings, their purpose, weight estimation, Weight equation method – Development & procedures for evaluation of component weights. Weight fractions for various segments of mission. Choice of wind loading and thrust. Loading.

UNIT III POWER PLANT SELECTION 9

Choices available, comparative merits, Location of power plants, Functions dictating the locations.

UNIT IV DESIGN OF WING, FUSELAGE AND EMPHANAGE 9

Selection of aero foil. Selection of Wing parameters, selection of sweep, Effect of Aspect ratio, Wing Design and Airworthiness requirements, V-n diagram, loads, Structural features. Elements of fuselage design, Loads on fuselage, Fuselage Design. Fuselage and tail sizing. Determination of tail surface areas, Tail design, Structural features, check for nose wheel lift off.

UNIT V DESIGN OF LANDING GEAR AND CONTROL SURFACE 9

Landing Gear Design, Loads on landing gear, Preliminary landing gear design. Elements of Computer Aided and Design, Special consideration in configuration lay-out, Performance estimation. Stability aspects on the design of control surface.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

At the end of the course, Students will be able to

CO1: Explain the preliminary design of an aircraft starting from data collection to satisfy mission specifications.

CO2: Apply the procedure involved in weight estimation, power plant selection, estimation of the performance parameters, stability aspects, design of structural components of the airplane, stability of structural elements, estimation of critical loads etc

CO3: Estimate of geometric and design parameters of an airplane and to initiate the design of a system, component, or process to meet requirements for aircraft systems;

CO4: Design the aircraft to a level of sufficient detail to demonstrate that it satisfies given mission specifications

CO5: Create a Work environment involving the integration of engineering practices in such subjects as aerodynamics, structures, propulsion, and flight mechanics.

TEXT BOOKS:

1. Raymer, D.P. Aircraft conceptual Design, AIAA series, 5th edition, 2012.
2. Torenbeck, E. Synthesis of Subsonic Airplane Design, Delft University Press, U.K. 1986.

REFERENCE:

1. Kuechemann, D, “The Aerodynamic Design of Aircraft, American Institute of Aeronautics publishers, 2012.

MAPPING OF COS AND POS:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	1	2	2	-	-	-	-	-	-	1	2	-	-
CO2	2	3	2	2	1	-	-	1	-	-	-	-	2	1	-
CO3	2	2	3	1	2	-	2	-	-	2	-	-	3	1	-
CO4	2	3	1	2	3	-	2	1	-	-	-	-	3	2	2
CO5	1	3	-	-	-	-	-	-	-	-	-	1	3	2	3
Avg	1.6	3	1.8	1.8	2	0	2	1	0	2	0	1	2.6	1.5	2.5

NCC Credit Course Level 3*

NX3651	(ARMY WING) NCC Credit Course - III	L T P C 3 0 0 3
PERSONALITY DEVELOPMENT		**9**
PD 3	Group Discussion: Team Work	2
PD 4	Career Counselling, SSB Procedure & Interview Skills	3
PD 5	Public Speaking	4
BORDER & COASTAL AREAS		**4**
BCA 2	Security Setup and Border/Coastal management in the area	2
BCA 3	Security Challenges & Role of cadets in Border management	2
ARMED FORCES		**3**
AF 2	Modes of Entry to Army, CAPF, Police	3
COMMUNICATION		**3**
C 1	Introduction to Communication & Latest Trends	3
INFANTRY		**3**
INF 1	Organisation of Infantry Battalion & its weapons	3
MILITARY HISTORY		**23**
MH 1	Biographies of Renowned Generals	4
MH 2	War Heroes - PVC Awardees	4
MH 3	Study of Battles - Indo Pak War 1965, 1971 & Kargil	9
MH 4	War Movies	6

TOTAL: 45 PERIODS

NCC Credit Course Level 3*

NX3652	(NAVAL WING) NCC Credit Course - III	L	T	P	C
		3	0	0	3
PERSONALITY DEVELOPMENT					**9**
PD 3	Group Discussion: Team Work				2
PD 4	Career Counselling, SSB Procedure & Interview Skills				3
PD 5	Public Speaking				4
BORDER & COASTAL AREAS					**4**
BCA 2	Security Setup and Border/Coastal management in the area				2
BCA 3	Security Challenges & Role of cadets in Border management				2
NAVAL ORIENTATION					**6**
NO 3	Modes of Entry - IN, ICG, Merchant Navy				3
AF 2	Naval Expeditions & Campaigns				3
NAVAL COMMUNICATION					**2**
NC 1	Introduction to Naval Communications				1
NC 2	Semaphore				1
NAVIGATION					**2**
N 1	Navigation of Ship - Basic Requirements				1
N 2	Chart Work				1
SEAMANSHIP					**15**
MH 1	Introduction to Anchor Work				2
MH 2	Rigging Capsule				6
MH 3	Boatwork - Parts of Boat				2
MH 4	Boat Pulling Instructions				2
MH 5	Whaler Sailing Instructions				3
FIRE FIGHTING FLOODING & DAMAGE CONTROL					**4**
FFDC 1	Fire Fighting				2
FFDC 2	Damage Control				2
SHIP MODELLING					**3**
SM	Ship Modelling Capsule				3

TOTAL : 45 PERIODS

NCC Credit Course Level 3*

NX3653	(AIR FORCE WING) NCC Credit Course Level - III	L T P C 3 0 0 3
PERSONALITY DEVELOPMENT		**9**
PD 3	Group Discussion: Team Work	2
PD 4	Career Counselling, SSB Procedure & Interview Skills	3
PD 5	Public Speaking	4
BORDER & COASTAL AREAS		**4**
BCA 2	Security Setup and Border/Coastal management in the area	2
BCA 3	Security Challenges & Role of cadets in Border management	2
AIRMANSHIP		**1**
A 1	Airmanship	1
BASIC FLIGHT INSTRUMENTS		**3**
FI 1	Basic Flight Instruments	3
AERO MODELLING		**3**
AM 1	Aero Modelling Capsule	3
GENERAL SERVICE KNOWLEDGE		**2**
GSK 4	Latest Trends & Acquisitions	2
AIR CAMPAIGNS		**6**
AC 1	Air Campaigns	6
PRINCIPLES OF FLIGHT		**6**
PF 1	Principles of Flight	3
PF 2	Forces acting on Aircraft	3
NAVIGATION		**5**
NM 1	Navigation	2
NM 2	Introduction to Met and Atmosphere	3
AERO ENGINES		**6**
E 1	Introduction and types of Aero Engine	3
E 2	Aircraft Controls	3

TOTAL : 45 PERIODS

AE3611 **AIRCRAFT DESIGN PROJECT** **L T P C**
0 0 4 2

COURSE OBJECTIVES:

- To make the student work in groups and effectively improve their team work.
- To understand the Concepts involved in Aerodynamic design, Performance analysis and stability aspects of different types of airplanes
- To carry out the structural design part of the airplane

AERODYNAMIC DESIGN:

1. Comparative studies of different types of airplanes and their specifications and performance details with reference to the design work under taken.
2. Preliminary weight estimation, Selection of design parameters, power plant selection, aerofoil selection, fixing the geometry of Wing, tail, control surfaces Landing gear selection.
3. Preparation of layout drawing, construction of balance and three view diagrams of the airplane under consideration.
4. Drag estimation, Performance calculations, Stability analysis and V-n diagram.

STRUCTURAL DESIGN:

1. Preliminary design of an aircraft wing – Shrenck's curve, structural load distribution, shear force, bending moment and torque diagrams
2. Detailed design of an aircraft wing – Design of spars and stringers, bending stress and shear flow calculations – buckling analysis of wing panels
3. Preliminary design of an aircraft fuselage – load distribution on an aircraft fuselage
4. Detailed design of an aircraft fuselage – design of bulkheads and longerons – bending stress and shear flow calculations – buckling analysis of fuselage panels
5. Design of control surfaces - balancing and maneuvering loads on the tail plane and aileron, rudder loads
6. Design of wing-root attachment
7. Landing gear design
8. Preparation of a detailed design report with CAD drawings

TOTAL: 60 PERIODS

COURSE OUTCOME:

Upon completion of the Aircraft Design Project students will able to

CO1: Evaluate the weight estimation, drag estimation and selection of design parameters of the aircraft

CO2: Estimate the performance of the aircraft design.

CO3: Design the aircraft wings, fuselage, loading gears etc., in structural point of view.

MAPPING OF COS AND POS:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1	1		1	-	-	2	-	1	3	2	2
CO2	3	2	1	2	1	1	1	1	-	2	-	2	3	1	1
CO3	3	3	2	1	1	2	-	-	-	1	-	1	3	2	2
Avg	3	2.33	1	1.33	1	1.5	1	1		1.67		1.33	3	1.67	1.67

AE3612 FLIGHT TRAINING / FLIGHT SIMULATION LABORATORY

L	T	P	C
0	0	4	2

COURSE OBJECTIVES:

Of this course are

01. To make students learn the steps involved in CG determination.
02. To introduce the methods of calibrating various flight instruments.
03. To impart practical knowledge to students on determining various performance parameters.
04. To find the neutral points and maneuver points in an aircraft.
05. To impart practical knowledge to students about different modes of stability such as Dutch roll, phugoid motion etc.

- The experiments will be conducted by the students during the flight training programme at IIT- Kanpur or similar place and evaluation is also done by the faculty of IIT-Kanpur. Otherwise the experiments can also be done using Flight simulator.

LIST OF EXPERIMENTS

1. C.G. determination
2. Calibration of ASI and Altimeter
3. Calibration of special instruments
4. Cruise and climb performance
5. Determination of stick fixed & stick free neutral points
6. Determination of stick fixed & stick free maneuver points
7. Verification of Lateral-directional equations of motion for a steady state side slip maneuver
8. Verification of Lateral-directional equations of motion for a steady state coordinated turn
9. Flight determination of drag polar of a glider
10. Demonstration of stall, Phugoid motion and Dutch roll

TOTAL: 60 PERIODS

COURSE OUTCOMES:

Upon completion of this course, Students will be able to

CO1: Acquire flying experience on a trainer aircraft.

CO2: Determine the C.G position of an airplane.

CO3: Calculate the performance parameters such as rate of climb, climb angle etc.

CO4: Compute the stability parameters such as stick fixed neutral point, stick free neutral point and control parameters such as stick fixed manoeuvre point, stick free manoeuvre point.

CO5: Get practical experience of Dutch roll and phugoid motion.

MAPPING OF COS AND POS:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1	1	2	3	3	2	2	3	2	2
CO2	3	3	3	1	2	1	1	2	3	3	2	2	3	2	2
CO3	3	3	2	2	2	1	1	1	3	3	1	1	3	2	2
CO4	3	3	2	1	1	1	2	2	3	3	2	1	3	2	2
CO5	3	3	2	1	1	1	1	2	2	2	2	2	3	1	2
Avg	3	3	2.4	1.4	1.6	1	1.2	1.8	2.8	2.8	1.8	1.6	3	1.8	2

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