

B.Sc. (AVIONICS) 2018 Onwards -Three Year Program (Semester system)
SEMESTER - I

S.No.	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1.	AI2101	English	3	0	0	-	3	3
2.	AI2102	Engineering Mathematics	3	0	0	-	3	3
3.	AI2103	Aviation Legislation-1	3	0	0	-	3	3
4.	AI2104	Maintenance Practices-1	3	0	0	-	3	3
Practical								
5.	AI2121	Electrical Fundamental Laboratory	0	0	3	-	3	3
6.	AI2122	Maintenance Practices Laboratory	0	0	3	-	3	3
Total							18	18

SEMESTER-II

S.No.	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1.	AI2201	Aviation Legislation-II	3	0	0	-	3	3
2.	AI2202	Electrical Fundamentals	3	0	0	-	3	3
3.	AI2203	Electronic Fundamentals	3	0	0	-	3	3
4.	AI2204	Maintenance Practices-II	3	0	0	-	3	3
Practical								
5.	AI2221	Computer Laboratory	0	0	3	-	3	3
6.	AI2222	Electronic Fundamentals	0	0	3	-	3	3
Total							18	18

SEMESTER-III

S.No.	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1	AI2301	Basic Aerodynamics	3	0	0	-	3	3
2	AI2302	Human Factors	3	0	0	-	3	3
3	AI2303	Materials and Hardware	3	0	0	-	3	3
4	AI2304	Aircraft Aerodynamics, Structures and systems (Air Frame)	3	0	0	-	3	3
Practical								
5	AI2321	Materials and Hardware Laboratory	0	0	3	-	3	3
6	AI2322	Aircraft Aerodynamics, Structures and systems Laboratory(Air Frame)	0	0	3	-	3	3
Total							18	18

SEMESTER-IV

S.No.	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1	AI2401	Digital Techniques Electronic Instrument Systems	3	0	0	-	3	3
2	AI2402	Propulsion	3	0	0	-	3	3
3	AI2403	Aircraft Aerodynamics, Structures and systems (Comm. & Nav.)	3	0	0	-	3	3
4	AI2404	Aircraft Aerodynamics, Structures and systems (Instrument)	3	0	0	-	3	3
Practical								
5	AI2421	Digital Techniques Lab	0	0	3	-	3	3
6	AI2422	Comm. & Nav. Lab	0	0	3	-	3	3
Total							18	18

SEMESTER - V

S.No.	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1	AI2501	Aircraft aerodynamics, structures and systems (Electrical)	3	0	0	-	3	3
2	AI2502	Aircraft Aerodynamics, Structures And Systems (Avionics system maintenance)	3	0	0	-	3	3
3	AI2503	Aviation Safety Management System	3	0	0	-	3	3
4	AI2056	Auto flight & On-Board Maintenance System (Elective-I)	3	0	0	-	3	3
Practical								
3	AI2521	Instrument System Lab	0	0	3	-	3	3
4	AI2522	Avionics Maintenance Lab	0	0	3	-	3	3
Total							18	18

SEMESTER - VI

S.No	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1	AI2055	IT for Aviation and soft skills (Elective-II)	3	0	0	-	3	3
2	AI2681	Project	0	0	20	-	20	20
Total							23	23

ELECTIVES-I

S.No.	Course Code	Course Title	L	T	P	S	C	TCH
Theory								
1	AI2051	Total Quality Management	3	0	0	-	3	3
2	AI2052	Aviation Maintenance Management	3	0	0	-	3	3
3	AI2056	Autoflight & On-Board Maintenance System	3	0	0	-	3	3

ELECTIVE-II

1	AI2054	Air Transportation Management	3	0	0	-	3	3
2	AI2055	IT for Aviation and Soft Skills	3	0	0	-	3	3
3	AI2053	Airport Management	3	0	0	-	3	3
4	AI2057	Soft skill for Technical Authering	3	0	0	-	3	3

SEMESTER - I

COURSE TITLE	ENGLISH	CREDITS	3
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COURSE CODE		COURSE CATEGORY	PC	L-T-P-S	3-0-3-0
AI 2101		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				PO
1.	To develop verbal and written communication skill.				PO1,2
2.	To develop soft skill and understand human behavior.				PO3,4
3.	To develop vocabulary to integrate with analytical reasoning in communication and sharing information with accuracy.				PO5
Prerequisites : Nil					
MODULE - 1 : GENERAL ENGLISH (12 L)					
Expository Writing, Persuasive writing, Work shop ♣Information writing Language & Communication skills Aerodrome communication, Triggering actions in aeronautical communication Sharing information in aeronautical communication, Incident reporting in aeronautical communication, Aviation related lexis.					
MODULE - 2 : SPOKEN ENGLISH (12 L)					
Public speaking, Quiz, Group discussions, Presentation.					
MODULE - 3 : AVIATION VOCABULARY AND PHRASEOLOGY (12 L)					
Normal pronunciation, Pronunciation for Aviation (Alphabets, Numerals). Holistic descriptors (6 skills) Pronunciation - Pronunciation, stress, rhythm, and intonation, Structure - Both basic and complex grammatical structures and sentence, patterns, Vocabulary - Vocabulary range and accuracy, Fluency. Comprehension - comprehension of linguistic and cultural subtleties, Interaction - verbal and non-verbal cues and responds.					
MODULE - 4 : TECHNICAL WRITING (12 L)					
Technical format, Getting ideas, Drafting, Analyzing draft, Revising, Editing, Attachments, Annexure, Appendices, Drawings, Tables, Legend, Publishing, Soft wares, Tech list preparation, Tech log preparation, Logbook completion, Maintenance schedule preparation, Technical Briefing.					
MODULE 5 - Radio Communications (12 L)					
Triggering actions in aeronautical communication, Sharing information aeronautical.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	1. Aviation English – Henry Emery & Andy Roberts				
REFERENCE BOOKS					
1.	1. Aviation English Teaching Materials and Resources (Fiona A Robertson, University of Franche – Comte, France, President of the International Civil Aviation English Association, ICAO Aviation Language Symposium, Montreal Sep 2004)				

SEMESTER - I

COURSE TITLE		ENGINEERING MATHEMATICS		CREDITS	3
COURSE CODE		COURSE CATEGORY	PC	L-T-P-S	3-0-3-0
AI 2102		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				PO
1.	Able to Understand the concept of matrices and Eigen Values.				PO1
2.	Able to Understand the concept of algebra and features in Differential. Calculus.				PO2,3
3.	Able to Understand the concept of Trigonometry and Dynamics.				PO4,5
Prerequisites : Nil					
MODULE - 1 : MATRICES(12 L)					
Characteristic equations – Properties of Eigen values – Eigen values and Eigen vectors–Cayley Hamilton theorem (without proof) – Verification and inverse by Cayley Hamilton theorem. Diagonalisation of a matrix – Orthogonal matrices - Matrix forms of quadratic and canonical form– Reduction to canonical form of the given quadratic by orthogonal transformation.					
MODULE - 2 : ALGEBRA(12 L)					
Pair of linear equations in two variables. Solution of pair of linear equations in two variables algebraically- by substitution, by elimination and by cross multiplication. Standard form of a quadratic equation. Solution of the quadratic equations by using quadratic formula. Discriminant and nature of roots.					
MODULE - 3 : CALCULUS(12 L)					
Curvature - Radius of curvature – Centre of curvature – Circle of curvature – Cartesian co-ordinates – Geometrical application of differential calculus.					
MODULE - 4 : TRIGONOMETRY(12 L)					
Trigonometric ratios of an acute angle of a right-angled triangle. Proof and applications of the trigonometric identities. Trigonometric ratios of complementary angles. Problems on heights and distances. Angles of elevation / depression.					
MODULE 5 - DYNAMICS (12 L)					
Statics - Analytical conditions of equilibrium of coplanar forces -Virtual work - Catenary Dynamics - Velocities and acceleration along with radial and transverse direction and along with tangential & normal direction -Motion of a particle.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Grewal B.S., Higher Engineering Mathematics, Delhi, 30 TH Edition, Khanna Publisher, 2004.				
2.	Chandrasekaran A. A Text book of Engineering Mathematics I, Chennai, Dhanam Publications.				
REFERENCE BOOKS					
1.	Venkataraman.M.K., Engineering Mathematics ,Vol- I, Chennai, National Publishing Company.				
2.	KandaswamyP, Thilagavathy. .,K. and.Gunavathy. K Engineering Mathematics Volume I & II, New Delhi, S.Chand and Company, 2005.				

SEMESTER – I

COURSE TITLE		AVIATION LEGISLATION -1		CREDITS	3
COURSE CODE		COURSE CATEGORY	PC	L-T-P-S	3-0-3-0
AI 2103		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				PO
1.	Able to Understand International Civil Aviation Organisation and relationship between CAR-21, CAR-M, CAR-145, CAR-66, CAR 147.				PO1
2.	Able to Understand CAR 66 licensing requirements.				PO2
3.	Able to Understand aircraft operations and certification rules.				PO3,4,5
Prerequisites : Nil					
MODULE -1 Regulatory Framework(12 L)					
Role of International Civil Aviation Organisation; The Aircraft Act and Rules made there under Role of the DGCA; Relationship between CAR-21, CAR-M, CAR-145, CAR-66, CAR 147 The Aircraft Rules (Applicable to Aircraft Maintenance and Release) Aeronautical Information Circulars (Applicable to Aircraft Maintenance and Release) CAR Sections 2.					
MODULE - 2 : CAR-66 Certifying Staff – Maintenance(12 L)					
Detailed understanding of CAR-66.					
MODULE – 3 : CAR-145 — Approved Maintenance Organisations (12 L)					
Detailed understanding of CAR-145 and CAR M Subpart F.					
MODULE – 4 : Aircraft Operations(12 L)					
Commercial Air Transport/Commercial Operations, Air Operators Certificates; Operators Responsibilities, in particular regarding continuing airworthiness and maintenance; Documents to be carried on board; Aircraft Placarding (Markings).					
MODULE 5 – Aircraft Certification (12 L)					
(a) General - Certification rules: such as FAA & EACS 23/25/27/29; Type Certification; Supplemental Type Certification; CAR-21 Design/Production Organisation Approvals. Aircraft Modifications and repairs approval and certification, Permit to fly requirements.					
(b) Documents - Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station Licence and Approval.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Aircraft Act 1934 & Aircraft Rule 1937				
2.	Civil Aviation Requirements (CAR)- Section 2				
3.	CAR -M, CAR –21, CAR 66, CAR -145 & CAR 147				
REFERENCE BOOKS					
1.	Same as Text books				

SEMESTER – I

COURSE TITLE		MAINTENANCE PRACTICES-1		CREDITS	3
COURSE CODE		COURSE CATEGORY	PC	L-T-P-S	3-0-3-0
AI 2104		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				PO
1.	Able to Understand the requirements of safety Precautions on aircraft and in Workshop.				PO1
2.	Able to familiarize tools and procedures to use general Test Equipment.				PO2,3
3.	Able to Understand aircraft Electrical Wiring Interconnection System.				PO4,5
Prerequisites : Nil					
MODULE - 1 : Safety Precautions-Aircraft and Workshop(12 L)					
Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.					
Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.					
MODULE - 2 : Tools(12 L)					
Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment;					
Fits and Clearances Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.					
MODULE - 3 : Avionic General Test Equipment(12 L)					
Operation, function and use of avionic general test equipment.					
MODULE - 4 : Electrical Wiring Interconnection System (EWIS)-1(12 L)					
Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions.					
MODULE 5 –Electrical Wiring Interconnection System (EWIS)-2 (12 L)					
Identification of wire types, their inspection criteria and damage tolerance. Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding. EWIS installations, inspection, repair, maintenance and cleanliness standards.					
LAB / MINI PROJECT/FIELD WORK					

Nil	
TEXT BOOKS	
1.	EASA Module-07A Maintenance Practices by AIRCRAFT TECH BOOK CO.
REFERENCE BOOKS	
1.	CAP 715 - An Introduction to Aircraft Maintenance Engineering Human Factors for JAR 66 by CA
2.	CAP 718 - Human Factors in Aircraft Maintenance and Inspection by CAA
3.	Civil Aircraft Inspection Procedures (CAP 459)- Part I, Basic by CAIP I
4.	Civil Aircraft Inspection Procedure (CAP 459)- Part II by CAIP II
5.	Advanced Composites by Cindy Foreman
6.	Aviation Maintenance Technician Series (A/F Structure) by Dale Crane
7.	Aviation Maintenance Technician Series (Power Plant) by Dale Crane

SEMESTER – I

COURSE TITLE	ELECTRICAL FUNDAMENTAL			CREDITS	3
COURSE CODE		COURSE CATEGORY	PC	L-T-P-S	3-0-3-0
AI 2121	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT LEVEL	LB
COURSE OUTCOMES					
The students should be able to:					
1. Make Single and Double wiring circuit.					
2. Measure the voltage and specific gravity of electrolyte .					
3. Make remote control circuits.					
4. Verify and calculate resistance .					
5. Verify and calculate voltage and current to ascertain Kirchoff's law.					
6. Find the unknown resistance value .					
7. Find the effect of capacitor connected in AC and DC power.					
LIST OF EXPERIMENTS					hours
1. Wiring practices of Single and Double wiring methods.					04
2. Measurement of voltage and specific gravity of electrolyte in lead acid battery using volt meter and hydrometer respectively.					05
3. Wiring the circuit with relay control.					04
4. Verification of total resistance in series, parallel and series parallel circuits by calculation.					04
5. Verification of Kirchoff's voltage and current law in series, parallel and Series-parallel circuits.					04
6. Finding the unknown resistance value by Wheatstone bridge tester.					04
7. Finding the effect of capacitor connected in AC and DC power.					05
TOTAL HOURS					30
Sl. No	DETAILS OF EQUIPMENT			Qty. Req.	Experiment No.

1.	Warring board with power terminal, fuse, switch and lamp.	1 Each	1,4,5
2.	Electrical wire.	5 meters	2
3.	Metal strip	2" length and ½ width	1
4.	Lead acid battery, Hydrometer, Volt meter.	1 Each	2
5.	Multi contact relay.	1	1
6.	resistances with different values	3	4
7.	Ammeter.	1	5
8.	Wheatstone bridge tester.	1	6

SEMESTER - I

COURSE TITLE	MAINTENANCE PRACTICES LABORATORY			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2122	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT LEVEL	LB
COURSE OUTCOMES					
The students should be able to:					
1. Understand different terms used in riveting and Familiarize with the various types of tools used in riveting and dimpling.					
2. Bend and flare aircraft pipes and Install the clamp in aircraft pipes.					
3. Decide airworthiness condition of bearings and Various methods used for bearing lubrication					
LIST OF EXPERIMENTS					hours
1. Demonstration on Riveted joints, rivet spacing and pitch.					4
2. Identification of Tools used for riveting and dimpling.					4
3. Bending and belling/ flaring aircraft pipes.					4
4. Installation and clamping of pipes.					4
5. Cleaning and inspection of bearings.					4
6. Lubrication of bearings.					4
TOTAL HOURS					24
Sl. No	DETAILS OF EQUIPMENT			Qty. Req.	Experiment No.
1.	Snap and dolly			1	2
2.	Hand bending tool and flaring tool.			1	3

SEMESTER – II

COURSE TITLE		AVIATION LEGISLATION-2		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2201		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	Able to understand CAR-M Continuing Airworthiness requirements.				CO1
2.	Able apply National and International Requirements while issuing aircraft release certificates.				CO2
3.	Able to understand Safety Management System and Fuel Tank Safety procedures.				CO2
Prerequisites : Nil					
MODULE -1 : CAR-M(12 L)					
Detail understanding of CAR M provisions related to Continuing Airworthiness , Detailed understanding of CAR-M.					
MODULE - 2 : Applicable National and International Requirements (a)(12 L)					
Maintenance Programme, Maintenance checks and inspections; Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.					
MODULE - 3 : Applicable National and International Requirements(b)(12 L)					
Continuing airworthiness; Test flights; ETOPS / EDTO , maintenance and dispatch requirements; RVSM, maintenance and dispatch requirements RNP, MNPS Operations. All Weather Operations, Category 2/3 operations and minimum equipment requirements.					
MODULE - 4 : Safety Management System(12 L)					
State Safety Programme , Basic Safety Concepts, Hazards & Safety Risks, SMS Operation, SMS Safety performance, Safety Assurance .					
MODULE --5 : Fuel Tank Safety (12 L)					
Special Federal Aviation Regulations (SFARs) from 14 CFR SFAR 88 of the FAA and of JAA TGL 47, Concept of CDCCL,Airworthiness Limitations Items (ALI).					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Aircraft Act 1934 & Aircraft Rule 1937				
2.	Civil Aviation Requirements (CAR)- Section 2				
3.	CAR -M, CAR -21, CAR 66, CAR -145 & CAR 147				
REFERENCE BOOKS					
1.	Same as Text books				

SEMESTER - II

COURSE TITLE		ELECTRICAL FUNDAMENTALS		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2202		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand concept on Electron theory, static electricity and conduction, electrical terminology and power.				CO1
2.	To understand concept on generation of electricity, DC sources of electricity, magnetism and DC motor/generator theory.				CO1
3.	To understand concept on DC Circuits, Resistance, Capacitance, Inductance, AC Theory as well as Transformers,				CO2
Prerequisites : Nil					
MODULE -1 :Electron Theory, Static Electricity and Conduction, Electrical Terminology and Power (12 L)					
Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.					
Static Electricity and Conduction Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum.					
Electrical Terminology The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.					
Power Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula.					
MODULE - 2 : Generation of Electricity, DC Sources of Electricity, Magnetism and DC Motor/Generator Theory(12 L)					
Generation of Electricity Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.					
DC Sources of Electricity Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.					
Magnetism Theory of magnetism; Properties of a magnet Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor. Magneto motive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.					
DC Motor/Generator Theory Basic motor and generator theory; Construction and purpose of components in DC generator; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.					

MODULE – 3 : DC Circuits, Resistance/Resistor, Capacitance/Capacitor and Inductance/Inductor (12 L)

DC Circuits

Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply

Resistance/Resistor

Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.

Positive and negative temperature coefficient conductance;

Fixed resistors, stability, tolerance and limitations, methods of construction;

Variable resistors, thermistors, voltage dependent resistors;

Construction of potentiometers and rheostats;

Construction of Wheatstone Bridge;

Capacitance/Capacitor

Operation and function of a capacitor;

Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating;

Capacitor types, construction and function;

Capacitor colour coding;

Calculations of capacitance and voltage in series and parallel circuits;

Exponential charge and discharge of a capacitor, time constants;

Testing of capacitors.

Inductance/Inductor

Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field;

Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns; Mutual induction; The effect

the rate of change of primary current and mutual inductance has on induced voltage; Factors

affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back

emf, self induction; Saturation point; Principle uses of inductors;

MODULE – 4 : AC Theory, Resistive (R), Capacitive (C) and Inductive (L) Circuits and Filters(12 L)

AC Theory

Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power, Triangular/Square waves; Single/3 phase principles.

Resistive (R), Capacitive (C) and Inductive (L) Circuits

Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.

Filters

Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.

MODULE –5: Transformers, AC Generators and AC Motors(12 L)

Transformers

Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.

AC Generators

Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.

AC Motors

Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and poly phase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or split pole.

LAB / MINI PROJECT/FIELD WORK

Nil

TEXT BOOKS

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| 1. | EASA Module-03 Electrical Fundamental by AIRCRAFT TECH BOOK CO. |
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REFERENCE BOOKS

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| 1. | Electrical Technology by B.L.Theraja |
| 2. | Aircraft Electrical System by E.H.J.Pallett |
| 3. | Electrical & Electronics Technology by Edward Hughes |
| 4. | Aviation Maint Technician Hand Book-General -9A by FAA |
| 5. | Aircraft Electricity & Electronics by Thomas K Eismin |

SEMESTER – II

COURSE TITLE		ELECTRONIC FUNDAMENTALS		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2203		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand concept on Semiconductors—Diodes and Transistors.				CO1
2.	To understand concept on Integrated Circuits and Printed Circuit Boards.				CO2
3.	To understand concept on Servomechanisms.				CO2
Prerequisites : Nil					
MODULE -1 : Semiconductors—Diodes(12 L)					
Diode symbols;Diode characteristics and properties;Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), lightemitting diode, photo conductive diode, Varistor, rectifier diodes;Functional testing of diodes.					
MODULE - 2 : Transistors(12 L)					
Transistor symbols;Component description and orientation;Transistor characteristics and properties.					
MODULE - 3 : Integrated Circuits(12 L)					
Description and operation of logic circuits and linear circuits/operational amplifiers.					
MODULE - 4 : Printed Circuit Boards (12 L)					
Description and use of printed circuit boards.					
MODULE -5 :Servomechanisms (12 L)					
Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	EASA Module- 04 Electrical Fundamental Aviation Maintenance Technician Certification Series by AIRCRAFT TECH BOOK CO				
REFERENCE BOOKS					
1.	Basic Electronics by Bernard Grob				
2.	Civil Aircraft Inspection Procedure (CAP 459)- Part II byCAIP II				
3.	Electronic Communication System by George Kennedy				
4.	Civil Avionics Systems by Ian Moir and Allan Seabridge				
5.	Aviation Electronics by John M Ferrara				
6.	Aircraft Electrical & Electronic Systems by Mike Tooley & David Wyatt				

SEMESTER – II

COURSE TITLE		MAINTENANCE PRACTICES-2		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2204		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand Control Cables, Material handling, Welding, Brazing, Soldering and Bonding procedures.				CO1
2.	To understand concept on Aircraft Weight and balance, Aircraft handling and maintenance techniques.				CO2
3.	To understand concept on Abnormal events and Maintenance procedures.				CO2
Prerequisites : Nil					
MODULE -1 : Control Cables and Material handling (Composite and non-metallic) (12 L)					
Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.					
Material handling (Composite and non-metallic) Bonding practices; Environmental conditions, Inspection methods					
MODULE - 2 : Welding, Brazing, Soldering and Bonding(12 L)					
Soldering methods; inspection of soldered joints. Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.					
MODULE – 3 : Aircraft Weight and Balance and Aircraft Handling and Storage(12 L)					
Aircraft Weight and Balance Centre of Gravity/Balance limits calculation: use of relevant documents; Preparation of aircraft for weighing; Aircraft weighing;					
Aircraft Handling and Storage Aircraft taxiing/towing and associated safety precautions;Aircraft jacking, chocking, securing and associated safety precautions;Aircraft storage methods;Refuelling/defuelling procedures; De-icing/anti-icing procedures;Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.					
MODULE – 4 : Disassembly, Inspection, Repair and Assembly Techniques(12 L)					
Types of defects and visual inspection techniques.Corrosion removal, assessment and re-protection.General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes;Non destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods.Disassembly and re-assembly techniques. Trouble shooting techniques					
MODULE –5 :Abnormal Events and Maintenance Procedures (12 L)					

Abnormal Events

Inspections following lightning strikes and HIRF penetration.

Inspections following abnormal events such as heavy landings and flight through turbulence.

Maintenance Procedures

Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operation; Maintenance Inspection/Quality Control/Quality Assurance; Additional maintenance procedures. Control of life limited components

LAB / MINI PROJECT/FIELD WORK

Nil

TEXT BOOKS

- | | |
|----|---|
| 1. | EASA Module-07A Maintenance Practices by AIRCRAFT TECH BOOK CO. |
|----|---|

REFERENCE BOOKS

- | | |
|----|---|
| 1. | CAP 715 - An Introduction to Aircraft Maintenance Engineering Human Factors for JAR 66 by CAA |
| 2. | CAP 718 - Human Factors in Aircraft Maintenance and Inspection by CAA |
| 3. | Civil Aircraft Inspection Procedures (CAP 459)- Part I, Basic by CAIP I |
| 4. | Civil Aircraft Inspection Procedure (CAP 459)- Part II by CAIP II |
| 5. | Advanced Composites by Cindy Foreman |
| 6. | Aviation Maintenance Technician Series (A/F Structure) by Dale Crane |
| 7. | Aviation Maintenance Technician Series (Power Plant) by Dale Crane |

COURSE TITLE	COMPUTER LABORATORY		CREDITS	3
COURSE CODE		COURSE CATEGORY	L-T-P-S	3-0-3-0
AI 2221	75%		ESE	25% Internal Exam
LEARNING LEVEL	BTL		ASSESSMENT LEVEL	LB
COURSE OUTCOMES				
<ol style="list-style-type: none"> 1. The student will be familiar with basic computer operation and use of MS office suit. 2. The student will be able to write a simple program with C language operators. 3. The student will be drawing 2D engineering drawings with the help of AutoCAD software and also Usage of Internet and Access to DGCA website. 				

LIST OF EXPERIMENTS		Hours
1.	Prepare and Print Your Resume in MS Word software	4
2.	Prepare a four grade columns Mark Sheet with chart in Microsoft Excel.	4
3.	Prepare a Presentation on Airplane Controls in Power Point.	4
4.	(a) By internet, access “dgca.nic.in” website, download the CAR Section 2 – Service ‘R’ and save in Desktop.	4
	(b) Access DGCA PARIKSHA website and download the Candidates User Manual.	4
5.	C programming Introduction and Hello world program.	4
6.	Basic math and operators in C language.	4
7.	If and Switch Statement in C language.	4
8.	C++ programming Introduction and Hello world program.	4
9.	Add two numbers in C++ programming language.	4
10.	Basics of AutoCAD and its Commands.	4
11.	Create a 2D diagram with given dimensions in AutoCAD	4
TOTAL HOURS		44

Sl. No	DETAILS OF EQUIPMENT	Qty. Req.	Experiment No.
1.	Monitor	20	all
2.	CPU	20	all
3.	Keyboard	20	all
4.	Mouse	20	all
5.	Printer	1	1
6.	Speaker	1	1

SEMESTER – II

COURSE TITLE	ELECTRONIC FUNDAMENTALS LABORATORY			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2222	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT LEVEL	LB
COURSE OUTCOMES					
The students should be able to:					
1. Understand the characteristics and testing of PN diodes along with construction and operations of full wave bridge rectifier.					
2. Understand the characteristics of Zener diode and Testing of transistors.					
3. Construct and verification of the operation of IC based voltage regulator and Assembling and checking the operation of Amplifier using transistors.					
LIST OF EXPERIMENTS					hours
1. Verification of characteristics of PN diodes.					4
2. Finding the serviceability of Diode with multi-meter.					4
3. Construction and operations of half wave and Center tap full wave rectifiers.					4
4. Construction and operations of Full wave Bridge rectifier.					4
5. Verification of Zener diode characteristics.					4
6. Finding the serviceability of junction transistors.					4
7. Construction and verification of the operation of IC based Voltage Regulator (IC 7805).					4
8. Assembly and checking the operation of Amplifier using transistors.					4
TOTAL HOURS					32
Sl. No	DETAILS OF EQUIPMENT			Qty. Req.	Experiment No.
1.	Analog Multimeter			1	1,2,3,4,5.6.7.8
2.	Digital Multimeter			1	1,2,3,4,5.6.7.8

3.	Different diodes	1	1,2,5,
4.	Transistors (NPN, PNP type)	1	6
5.	Voltage regulator IC 7805	1	7
6.	Trainer kits for rectifiers.	1	1,3,4,5,

SEMESTER – III

COURSE TITLE		BASIC AERODYNAMICS		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2301		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	Able to understand International Standard Atmosphere (ISA).				CO1
2.	Able to understand the concept of aerodynamic theories and their applications.				CO1
3.	Able to understand Theory of Flight and Flight Stability and Dynamics.				CO2
Prerequisites : Nil					
MODULE - 1 : Physics of the Atmosphere (12 L)					
International Standard Atmosphere (ISA), application to aerodynamics.					
MODULE - 2 : Aerodynamics-1 (12 L)					
Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, up wash and downwash, vortices, stagnation;The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag,induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant.					
MODULE - 3 : Aerodynamics-2(12 L)					
Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.					
MODULE - 4 : Theory of Flight (12 L)					
Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance;Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.					
MODULE -5 : Flight Stability and Dynamics (12 L)					
Longitudinal, lateral and directional stability (active and passive).					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	EASA Module-06 Hardware And Materials by AIRCRAFT TECH BOOK CO.				
REFERENCE BOOKS					
1.	A & P Technician Air Frame Text Book by Jeppesen				
2.	Aerodynamics by Clance				
3.	Mechanics of Flight by AC Kermode				

SEMESTER - III

COURSE TITLE		HUMAN FACTORS		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2302		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand the concept on Human Performance and Limitations				CO1
2.	To understand Social Psychology and Factors Affecting Performance as well as Physical Environment and Tasks.				CO2
3.	To understand the concept on communication, Human Error and Hazards in the Workplace.				CO2
Prerequisites : Nil					
MODULE -1 : General and Human Performance and Limitations (12 L)					
General The need to take human factors into account; Incidents attributable to human factors/human error; Murphy's' law.					
Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.					
MODULE - 2 : Social Psychology and Factors Affecting Performance (12 L)					
Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership.					
Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and under load; Sleep and fatigue, shift work; Alcohol, medication, drug abuse.					
MODULE - 3 : Physical Environment and Tasks (12 L)					
Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.					
Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.					
MODULE - 4 : Communication (12 L)					
Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.					
MODULE -5 : Human Error and Hazards in the Workplace (12 L)					
Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e accidents) Avoiding and managing errors.					
Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.					
LAB / MINI PROJECT/FIELD WORK					

Nil	
TEXT BOOKS	
1.	EASA Module-09 Human Factors by AIRCRAFT TECH BOOK CO.
REFERENCE BOOKS	
1.	CAP 718 - Human Factors in Aircraft Maintenance and Inspection by CAA
2.	Human Factors Training Manual by ICAO Doc 9683
3.	Human Factors Guidelines for Safety Audits Manual by ICAO Doc 9806
4.	Human Factor Guidelines for A/c Maintenance Manual by ICAO Doc 9824
5.	Human Factor Guide for Aircraft Maintenance (FAA) by William Shepard

COURSE TITLE		MATERIALS AND HARDWARE-1		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2303		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand the characteristics and properties of Ferrous and Non-Ferrous alloys.				CO1
2.	To understand the characteristics and properties of Composite, Non- Metallic materials and Wooden structures.				CO2
3.	To understand Corrosion, types of corrosion, their identification and fasteners				CO2
Prerequisites : Nil					
MODULE -1 : Aircraft Materials — Ferrous and Non-Ferrous(12 L)					
Aircraft Materials — Ferrous Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels; Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.					
Aircraft Materials — Non-Ferrous Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials; Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.					
MODULE - 2 : Aircraft Materials - Composite and Non- Metallic(12 L)					
Characteristics, properties and identification of common composite and nonmetallic materials, other than wood, used in aircraft; Sealant and bonding agents. The detection of defects/deterioration in composite and non-metallic material. Repair of composite and non-metallic material.					
MODULE - 3 : Wooden structures (12 L)					
Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.					
MODULE - 4 : Corrosion, Types of corrosion and their identification. (12 L)					
Corrosion Chemical fundamentals; Formation by, galvanic action process, microbiological, stress; Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.					
MODULE -5 : Fasteners (Screw threads) (12 L)					
Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads;					
LAB / MINI PROJECT/FIELD WORK					
Nil					

TEXT BOOKS	
1.	EASA Module-06 Hardware And Materials by AIRCRAFT TECH BOOK CO.
REFERENCE BOOKS	
1.	Civil Aircraft Inspection Procedures (CAP 459)- Part I, Basic by CAIP I
2.	Advanced Composites by Cindy Foreman
3.	A & P Mechanics by Dale Crane
4.	Aviation Maint Technician Hand Book-General -9A by FAA
5.	Aviation Maint Technician Hand Book-Airframe -15A by FAA
6.	Aviation Maint. Technician Handbook-General by FAA H 8083-30
7.	Aviation Maint. Technician Handbook-Airframe (Vol-II) by FAA H- 8083-31
8.	Shop Theory by J. A Enderson & Tatro

SEMESTER – III

COURSE TITLE		AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS (AIRFRAME)		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2304		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	Able to understand the concept of Theory of Flight, Structures and Flight Controls.				CO1
2.	Able to understand Fuel Systems and Hydraulic Power functioning.				CO1
3.	Able to understand Ice and Rain Protection system.				CO2
Prerequisites : Nil					
MODULE -1 : Theory of Flight (12 L)					
Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers, — pitch control: elevators, stabilators, variable incidence stabilisers and canards, — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices: slots, slats, flaps; Drag inducing devices: spoilers, lift dumpers, speed brakes; Operation and effect of trim tabs, servo tabs, control surface bias;					
MODULE - 2 : Structures — General Concepts and Flight Controls(12 L)					
Structures — General Concepts Fundamentals of structural systems; Zonal and station identification systems; Electrical bonding; Lightning strike protection provision.					
Flight Controls Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems;					
MODULE - 3 : Fuel Systems(12 L)					
System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling; Longitudinal balance fuel systems.					
MODULE - 4 : Hydraulic Power (12 L)					
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electrical, mechanical, pneumatic; Emergency pressure generation; Filters; Pressure control; Power distribution; Indication and warning systems; Interface with other systems.					
MODULE -5 :Ice and Rain Protection (12 L)					
Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic, chemical; Rain repellent; Probe and drain heating; Wiper Systems.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					

1.	EASA Module-13 Aircraft Structures and Systems by AIRCRAFT TECH BOOKCO.
REFERENCE BOOKS	
1.	Civil Aircraft Inspection Procedure (CAP 459)- Part II by CAIP II
2.	Aerodynamics by Clancey
3.	Airframe Structures, Vol-I by Dale Crane
4.	A & P Mechanics by Dale Crane
5.	Aviation Maint Technician Hand Book-Airframe -15A by FAA
6.	Air frame Test Guide (Mechanic) by FAA
7.	Aviation Maint. Technician Handbook-Airframe (Vol-I) by FAA H- 8083-31
8.	Aviation Maint. Technician Handbook-Airframe (Vol-II) by FAA H- 8083-31
9.	A & P Technician Air Frame Text Book by Jeppesen

SEMESTER - III

COURSE TITLE	MATERIALS AND HARDWARE LABORATORY			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2321	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT LEVEL	LB
COURSE OUTCOMES					
The students should be able to:					
1. Identify various types fasteners and their uses.					
2. Identify different types of standard threads, aircraft bolts, its specifications and markings.					
3. Understand hardness testing of ferrous metals and impact resistance.					
LIST OF EXPERIMENTS					hours
1. Identification, Types, and purpose of fasteners.					4
2. Identification of different types of standard threads used in aircraft.					4
3. Identification of different types of Aircraft Bolts, its Specifications and Markings.					4
4. Identification of different types of Nuts.					4
5. Ferrous material hardness test.					6
6. Ferrous material impact resistance test.					4
7. Studs: Types and removal of stud.					4
TOTAL HOURS					28
Sl. No	DETAILS OF EQUIPMENT			Qty. Req.	Experiment No.
1.	Brinnel hardness tester.			1	5
2.	Rockwell tester.			1	5
3.	Impact resistance tester.			1	6

SEMESTER – III

COURSE TITLE	AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS LABORATORY (AIRFRAME)			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2322	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT LEVEL	LB
COURSE OUTCOMES					
The students should be able to:					
1. Identify the primary flying controls such as Aileron, Elevator and Rudder and Secondary Flying controls such as Trim Tabs, Servo Tabs and Servo Rudder.					
2. Identify the Auxiliary flying control such as Flap, Slat, and Spoiler also to Identify the Aircraft station and Zone for location of various components.					
3. To know how to dismantle and assemble the Air cycle Machine (ACM)					
LIST OF EXPERIMENTS					hours
1. Familiarisation of Aircraft Primary flight control-Aileron					4
2. Familiarisation of Aircraft Primary flight controls- Elevator					4
3. Familiarisation of Aircraft Primary flight controls- Rudder					4
4. Familiarisation of Aircraft Secondary flight controls					4
5. Familiarisation of Aircraft Auxiliary flight controls					4
6. Identification of Aircraft Station and Zones					4
7. Dismantling and Assembling of Air cycle Machine (ACM)					6
TOTAL HOURS					30
S1. No	DETAILS OF EQUIPMENT			Qty. Req.	Experiment No.
1.	Pliers			1	7
2.	Cutter			1	7
3.	Set Spanner 10-12, 12-14 ,17-19			01 Each	7

SEMESTER – IV

COURSE TITLE		DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2401		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand the concept of Numbering Systems, Basic Computer Structure, Fibre Optics and Electronic Displays.				CO1
2.	To understand the concept of Electrostatic Sensitive Devices and Electromagnetic Environment.				CO1
3.	To understand the concept of Typical Electronic/Digital Aircraft Systems.				CO2
Prerequisites : Nil					
MODULE -1 : Numbering Systems(12 L)					
Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa. Logic Circuits - Identification of common logic gate symbols, tables and equivalent circuits.					
MODULE - 2 : Basic Computer Structure, Fibre Optics and Electronic Displays (12 L)					
Basic Computer Structure Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM).					
Fibre Optics Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.					
Electronic Displays Principles of operation of common types of displays used in modern aircraft, including. Cathode Ray Tubes, Light Emitting Diodes and Liquid - Crystal Display.					
MODULE - 3 : Electrostatic Sensitive Devices and Electromagnetic Environment (12 L)					
Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.					
Electromagnetic Environment Influence of the following phenomena on maintenance practices for electronic system: EMC - Electromagnetic Compatibility - EMI-Electromagnetic Interference - HIRF-High Intensity Radiated Field - Lightning/lightning protection.					
MODULE - 4 : Typical Electronic/Digital Aircraft Systems(12 L)					
General arrangement of typical electronic/digital aircraft systems and associated BITE(Built In Test Equipment) testing such as:ACARS-ARINC Communication and Addressing and Reporting System EICAS-Engine Indication and Crew Alerting System, FBW-Fly by Wire, FMS-Flight Management System and IRS-Inertial reference system.					
MODULE -5 : Typical Electronic/Digital Aircraft Systems(12 L)					
ECAM-Electronic Centralised Aircraft Monitoring, EFIS-Electronic Flight Instrument System,					

GPS-Global Positioning System, TCAS-Traffic Collision Avoidance system, Integrated modular Avionic, Cabin System and Information system.

LAB / MINI PROJECT/FIELD WORK

Nil

TEXT BOOKS

- | | |
|----|---|
| 1. | EASA Module-05 Electronic Instrument System by AIRCRAFT TECH BOOK CO. |
|----|---|

REFERENCE BOOKS

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|----|---|
| 1. | Modern Aviation Electronics by Albert D Helfrick |
| 2. | Basic Electronics by Bernard Grob |
| 3. | Civil Aircraft Inspection Procedure (CAP 459)- Part II by CAIP II |
| 4. | Aircraft Instruments by E.H.J. Pallett |
| 5. | Aircraft Instruments and Integrated System by E.H.J. Pallett |
| 6. | Digital Principle And Applications by Malvino and Leech |
| 7. | Introduction to Microprocessor by Mathur |
| 8. | Aircraft Digital Electronic and Computer System by Mike Tooley |
| 9. | Aircraft Electrical & Electronic Systems by Mike Tooley & David Wyatt |

SEMESTER – IV

COURSE TITLE		PROPULSION		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2402		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	Able to understand different types of gas turbine engine.				CO1
2.	Able to understand FADEC and engine control.				CO2
3.	Able to understand Engine Indicating Systems.				CO2
Prerequisites : Nil					
MODULE - 1 : Turbine Engines-I(12 L)					
Constructional arrangement and operation of turbojet, turbofan engines;					
MODULE - 2 : Turbine Engines-II(12 L)					
Constructional arrangement and operation of turbo shaft and turbo propeller engines;					
MODULE - 3 : FADEC(12 L)					
Electronic Engine control and fuel metering systems.					
MODULE - 4 : Engine Indicating Systems I					
Exhaust gas temperature /Inter stage turbine temperature systems;Engine speed; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems;					
MODULE -5 : Engine Indicating Systems II (12 L)					
Oil pressure and temperature;Fuel pressure, temperature and flow;Manifold pressure; Engine torque;Propeller speed.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	EASA Module-14 Propulsion BY AIRCRAFT TECH BOOK CO				
REFERENCE BOOKS					
1.	Aircraft Instruments BY E.H.J. Pallett				
2.	Aircraft Instruments and Integrated System by E.H.J. Pallett				
3.	Aircraft Gas Turbine Technology by Irwine Treager				

SEMESTER - IV

COURSE TITLE	AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS (Communication/Navigation)			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2403	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	The student will know the theoretical knowledge of Radio communication systems and its characteristics.				CO1
2.	The student should be able to give detailed description of Aircraft VHF and HF Communication system, components, function and maintenance practices.				CO2
3.	The student should be able to describe the various Navigational and Radar systems utilized in Civil Transport Aircraft.				CO2
Prerequisites : Nil					
MODULE -1 : Fundamentals of Radio Communication:(12 L)					
Frequency Spectrum - , Radio Wave Terminology, Propagation, Modulation-Types, Antennae - Types and Characteristics, Transmission lines – Types and Characteristics.					
MODULE - 2 : Aircraft Communication Systems:(12 L)					
— Very High Frequency (VHF) communication – Principle, Components and operations. — High Frequency (HF) communication- Principle, Components and operations. — Emergency Locator Transmitters- Operations — Cockpit Voice Recorder - Operations					
MODULE - 3 : Aircraft Navigation Systems:(12 L)					
Working principle and operations of:- — Very High Frequency omni directional range (VOR),— Automatic Direction Finding (ADF), — Instrument Landing System (ILS), Distance Measuring Equipment (DME).					
MODULE - 4 : Aircraft Navigation Systems:(12 L)					
Working principles of following systems: — Doppler navigation,— Area navigation, RNAV systems, — Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS).					
MODULE -5: Aircraft Radar Systems:(12 L)					
Working principles of following systems: — Air Traffic Control transponder, secondary surveillance radar, — Weather avoidance radar,— Radio altimeter.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Module 13-B2- Aircraft Aerodynamics Structures and Systems. Aircraft Technical Book Company.				
REFERENCE BOOKS					
1.	Aircraft Radio Systems - James Powell				
2.	Avionic Systems-Operations & Maintenance - James W.Wasson				

SEMESTER – IV

COURSE TITLE	<u>AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS</u> (Instruments)			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2404	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	The student will acquire the basic theoretical knowledge of Flight Instrument system and its indications.				CO1
2.	The student will able to give detailed description of Aircraft's Atmospheric Pressure instruments and Air data computer.				CO2
3.	The student should able to describe the various Gyroscopic utilized instruments and Airborne Warning systems in Civil Transport Aircraft.				CO2
Prerequisites : Nil					
MODULE -1 : Classification of Aircraft Instruments: (12 L)					
Flight – Engine instruments Principle, terminology, system operations and display of indications – Pitot/Static systems, Altimeters, Vertical speed indicators (VSI), Airspeed indicators.					
MODULE - 2 : Pitot Static systems:(12 L)					
Principle, construction of Pitot Tube, Multifunction probes. Altitude reporting/alerting systems – Altitude Acquisition and warnings; Air data computers; Temperature indicating systems, Fuel quantity indicating systems.					
MODULE – 3 Gyroscopic Instruments:(12 L)					
Principle, Construction, Operation and properties - Artificial horizons - Slip indicators - Directional gyros.					
MODULE – 4 : Terrain Awareness and Warning System:(12 L)					
Ground Proximity Warning Systems – System description – GPWC – EGPWS - Modes – Warnings and Indications. Flight Data Recording systems – System description and principle of operations.					
MODULE –5 : Angle of Attack and Stall warning System: (12 L)					
Principle and construction of AOA sensor and slotted probe airstream direction detector probe. Vibration measurement and indication- operation of piezo-electric vibration transducer. Glass cockpit - Electronic Flight Instrument Systems – EFIS, EADI, EHSI, EICAS/EICAM displays.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Module 13-B2– Aircraft Aerodynamics Structures and Systems. Aircraft Technical Book Company.				
REFERENCE BOOKS					
1.	Aviation Electronics – Keith W. Bose				
2.	Avionic Systems – Operation & Maintenance - James W.Wasson				
2.	Aircraft Instruments – Principle & Applications – EHJ. Pallett				

SEMESTER – IV

COURSE TITLE	DIGITAL TECHNIQUES LABORATORY		CREDITS	3	
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2421	75%		ESE	25% Internal Exam	
LEARNING LEVEL	BTL		ASSESSMENT LEVEL	LB	
COURSE OUTCOMES					
The students should be able to:					
1. Learn the functions of digital gates like AND, OR, NOT and Ex-OR.					
2. Learn the process of multiplexing and demultiplexing and their advantages.					
3. Understand the Conversion of Analog signals into Digital signals and vice versa and Understanding the landing gear lock and open system in aircraft.					
LIST OF EXPERIMENTS				hours	
1. Verification of logic gates with truth table of AND, OR, NOT, NOR, NAND, EXOR gates.				4	
2. Construct and verify the operation of Multiplexer				4	
3. Construct and verify the operation of Demultiplexer.				4	
4. Demonstration of Analog to Digital Converter.				4	
5. Demonstration of Digital to Analog Converter.				4	
6. Construction of Aircraft Landing Gear Indication and Warning System by logic circuit.				4	
7. Decimal to BCD conversion.				4	
8. Perform addition and subtraction of two 8 bit numbers using 8085 Microprocessor trainer kit.				4	
9. Handling of ESDS components and use of Wrist strap				4	
TOTAL HOURS				36	
DETAILS OF EQUIPMENT					
Sl. No			Qty. Req.	Experiment No.	
1.	Digital IC Trainer Kit (Breadboard with +5, +12, -12, 0)		8	1,2,3,6,7	

2.	8085 Microprocessor Kit	1	8
3.	Wrist strap	1	9
4.	Analog to Digital Convertor.	1	4
5.	Digital to Analog Convertor.	1	5
6.	TTL ICs (AND, NOR, NOT, OR, EX-OR, NAND GATES)	10 EACH	1,2,3,6,7

SEMESTER - IV

COURSE TITLE	Communication/Navigation Laboratory		CREDITS	3
COURSE CODE		COURSE CATEGORY	L-T-P-S	3-0-3-0
AI 2422	75%		ESE	25% Internal Exam
LEARNING LEVEL	BTL		ASSESSMENT LEVEL	LB
COURSE OUTCOMES				
The students should be able to:				
1. The student will familiar with Aircraft Communication, Navigational and Radar system's components, Correct usage of tools with aircraft structure and concern components and Maintenance Practices of Avionics.				
2. The student will get confidence while handling aircraft's live equipment and can able to refer Aircraft Maintenance Manual's task procedures and familiar with its Safety Precautions.				
3. The student can able to apply his knowledge in a practical manner using manufacturer's instruction.				
LIST OF EXPERIMENTS				hours
1. Basic maintenance practices of Electronic Shock Mount Rack, Polaroid pins with Cable Connectors and Cables.				5
2. Removal and Installation of VHF Communication systems components: Trans-receiver, Control Unit, and Cable Route tracing.				5
3. Removal and Fitment of Radar installations: Trans-receiver, Indicator and Antenna Pedestal.				5
4. Disassembly and Assembly of DME Integrator and its subassemblies.				5
5. Disassembly and Assembly of Weather Radar Trans-receiver subassemblies.				5
6. Disassembly and Assembly of Cockpit Voice Recorder.				5
TOTAL HOURS				30
S1. No	DETAILS OF EQUIPMENT		Qty. Req.	Experiment No.
1.	Radio Electronic Rack with Cables and Connectors		5	1
2.	VHF Transceiver		1	2
3.	VHF Control Unit		1	2
4.	Weather Radar Trans-receiver		1	3,5
5.	Weather Radar Indicator		1	3
6.	Weather Radar Antenna Pedestal.		1	3
7.	Distance Measuring Equipment Interrogator		1	5
8.	Cockpit Voice Recorder		1	6

SEMESTER - V

COURSE TITLE		AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS (ELECTRICAL)		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2501		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	The student will know the theoretical knowledge of Basic Electrical system.				CO1
2.	The student will able to give detailed description of Aircraft Electrical Power (Generation, Regulation, Distribution, Control and Protection) system.				CO2
3.	The student should able to apply his Power Protection and external/ground power knowledge in a practical manner of Civil Transport Aircraft.				CO2
Prerequisites : Nil					
MODULE -1. Batteries:(12 L)					
Principle, types, and construction of – Lead-Acid, Nickel Cadmium Installation and Operation; Maintenance Procedures- Charging / Discharge and Storage procedures.					
MODULE -2. Power Generation :(12 L)					
DC / AC Generators – Principle, Construction, Types, Characteristics and maintenance procedures; Emergency power generation – APU, RAT, Motor generator and Batteries.					
MODULE – 3. Regulation and Distribution:(12 L)					
Voltage regulator – Types, Construction and operation – Three Unit Regulator, Carbon pile, Solid state. Power distribution – Small and Heavy aircraft- Busbar Split/ system.					
MODULE – 4 : Power Conversion:(12 L)					
Transformers – Principle, Types – Voltage, Current, Losses and Efficiency. Inverters – Types, Construction and Operation. Rotary and Static Inverters - Types of Rectifier, Rectification types, TRU – construction and operation.					
MODULE -5 : Safety Devices:(12 L)					
Current limiting devices – Aircraft Fuses, Circuit Breakers – types, application and operations. External/Ground power: Introduction, Battery cart, Mobile Transformer Rectifier Unit, GPU.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Module 13-B2- Aircraft Aerodynamics Structures and Systems. Aircraft Technical Book Company.				
REFERENCE BOOKS					
1.	Airframe & Power Plant technician – General Hand Book				
2.	Aircraft Electrical Systems – PHJ Pallet				
3.	Aircraft Electrical and Electronics Systems (Sixth Edition) – Esmin K Thomas				
4.	Basic Electricity – Dale Crane				

SEMESTER – V

COURSE TITLE	AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS (Avionics system maintenance)			CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2502	75%			ESE	25% Internal Exam
LEARNING LEVEL	BTL			ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	Able to understand various maintenance checks on Avionics, Radome, Airframe and Aircraft Batteries.				CO1
2.	Able to understand function of Static Dischargers, Radome, various instruments and its maintenance.				CO2
3.	Able to understand On Board Maintenance Systems and its use.				CO2
Prerequisites : Nil					
MODULE - 1 : Maintenance checks(12 L)					
General - Scheduled, Unscheduled, Time Limits. Tasks – Numbering, Caution and Warning. Inspection – Visual, Zonal, Avionic Compartment, Radome and Airframe.					
MODULE - 2 : Installation and Maintenance of Aircraft Batteries(12 L)					
Safety Precautions during maintenance, Before /Initial Filling/Electrolyte level and adjustments. State of Charge, Capacity Test, Leakage Test, Battery Records, Storage and Transportation.					
MODULE – 3 : Static Dischargers and Radome(12 L)					
Static Dischargers: Function, Location, Installation and Maintenance.					
Radome: Construction, Inspection for Damages, Surface, Puncture, Internal. Repairs: Minor, Major, Temporary. Tests: Electrical Test, VSWR procedures and Bonding Test.					
MODULE – 4 : Instruments Maintenance and Gyroscopic Instruments(12 L)					
Instruments Maintenance: Flight Pitot-Static system, Pressure Heads, Electrical Test, Leakage Test, Inspection on Static Vents and pipelines.					
Gyroscopic Instruments: Handling of Gyroscopic Instruments, Monitoring of Gyroscopes, Functional Test during Maintenance and Performance Tests.					
MODULE -5 : On Board Maintenance Systems (12 L)					
Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	EASA Module-13 Aircraft Structures and Systems by AIRCRAFT TECH BOOK CO.				
REFERENCE BOOKS					
1.	Civil Aircraft Inspection Procedure (CAP 459)- Part II				

SEMESTER – V

COURSE TITLE		AVIATION SAFETY MANAGEMENT SYSTEM		CREDITS	3
COURSE CODE			COURSE CATEGORY	L-T-P-S	3-0-0-0
AI 2503		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	To understand the concept of introduction and aviation safety programme				CO1
2.	To understand the Training program and Fuel Safety Training.				CO1
3.	To understand the concept of State Safety Program.				CO1
Prerequisites : Nil					
MODULE -1 : INTRODUCTION (12 L)					
Aviation safety – Applicability, Definitions, Safety policies, and objectives, safety risks managements, Hazards identification, Safety assurance,					
MODULE - 2 : AVIATION SAFETY PROGRAMME (12 L)					
Safety Management system organization arrangement and safety accountability and responsibility , coordination of emergency planning , safety promotion.					
MODULE – 3 : Training program (12 L)					
Safety training, Safety communication, Documentation					
MODULE – 4 :Fuel Safety Training (1,2 L)					
Effectivity, Affected organizations, Persons affected organization who should receive training, General requirements of the training courses. Guidelines for preparing the content of phase 2 courses.					
MODULE –5 : State Safety Program (SSP) (12 L)					
Responsibility of ministry of civil aviation, Responsibility of DGCA, Accident investigation, State acceptable level of safety, implementation of SSP. Voluntarily reporting system					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	CAR Section 1 Series C Part 1, State Safety Programme By DGCA				
REFERENCE BOOKS					
	Same as Text book				

SEMESTER – V

COURSE TITLE		AUTOFLIGHT & ON-BOARD MAINTENANCE SYSTEM		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2056		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	The student will acquire the basic theoretical knowledge of Automatic Flight Control system and its components, function and indications.				CO1
2.	The student will able to give detailed description of Instrument Landing System, Sub systems and its caricaturists.				CO2
3.	The student should able to describe the On Board Maintenance systems of Modern Transport Aircraft and its functions.				CO2
Prerequisites : Nil					
MODULE -1 : Automatic Flight Control:(12 L)					
Introduction to AFCS – Architecture; Command Signal Processing – Trimmed Flight Holding-Stability Augmentation System (SAS); Command Augmentation System (CAS) – Super Augmentation (AFSC); AFCS Interface and Signal Processing					
MODULE - 2 : Autopilot Navigation Aids Interface:(12 L)					
Instrument Landing System – Elements – Localizer, Glidepath, Indicating; Auto Throttle Systems, Automatic Landing Systems – Categories, Modes- Take Off, Speed Control, Go-around. Automatic Landing Sequence.					
MODULE – 3 : On Board Maintenance System(12 L)					
On Board Maintenance System:					
Introduction to On board maintenance system, Central Maintenance System (CMS) – Typical central maintenance system ; Central Maintenance Computer (CMC) – Components and Schematic explanation; Fault Classification.					
MODULE – 4 : On Board Maintenance System: (12 L)					
Fault Classification, Built-in Type Equipment (BITE) Centralized Fault Display Interface (CFDIU) – Description and Operation; Multifunction Control Display Unit (MCDU); Levels of Maintenance – Line, Main base and Workshop.					
MODULE -5 :Data Loading Systems (12 L)					
Aircraft Communications Addressing and Reporting Systems (ACARS), Data Loading Systems, Electronic Library System; Multifunction Printing- Description and Operation; Digital Flight Data Recording System (DFDR); Structure Monitoring.					
LAB / MINI PROJECT/FIELD WORK					
Nil					
TEXT BOOKS					
1.	Aircraft Structures and Systems. Module 13 – B2 Aviation Maintenance Technician Certification Series. EASA – Aircraft Technical Book Company.				
REFERENCE BOOKS					
1	Automatic Flight Control – EHJ Pallett, S Coyle				

SEMESTER – V

COURSE TITLE	Instrument System Laboratory		CREDITS	3
COURSE CODE		COURSE CATEGORY	L-T-P-S	3-0-3-0
AI 2521	75%		ESE	25% Internal Exam
LEARNING LEVEL	BTL		ASSESSMENT LEVEL	LB
COURSE OUTCOMES				
The students should be able to:				
1. The student will familiar with Aircraft Instrument system's components, correct usage of tools and maintenance practices.				
2. The student will get confidence while handling aircraft's live equipment.				
3. The student can able to refer Aircraft Maintenance Manual's task procedures and familiar with its Safety Precautions and can able to apply his knowledge in a practical manner using manufacturer's instruction.				
LIST OF EXPERIMENTS				Hours
1. Dismantling, Inspection and assemble of Air Driven Artificial Horizon.				5
2. Dismantling, Inspection and Reassembly of Vertical Gyro Unit.				5
3. Dismantling, Inspection and Reassembly of Turn and Slip Indicator.				4
4. Dismantling, Inspection and Reassembly of Horizontal Situation Indicator.				4
5. Dismantling, Inspection and Reassembly of Radio Magnetic Indicator.				4
6. Dismantling, Inspection and Reassembly of Air Data Computer.				4
7. Dismantling, Inspection and Reassembly of Angle of Attack and Stall Warning system.				4
TOTAL HOURS				30
S1. No	DETAILS OF EQUIPMENT		Qty. Req.	Experiment No.
1.	Air Driven Artificial Horizon		1	1
2.	Vertical Gyro		1	2
3.	Turn and Slip Indicator		1	3
4.	Directional Gyro.		1	4
5.	Radio Magnetic Indicator		1	5
6.	Air Data Computer.		1	6
7.	AOA Sensor		1	7
8.	10X Magnifying glass		1	7

SEMESTER - V

COURSE TITLE	Avionics System Maintenance Laboratory		CREDITS	3
COURSE CODE		COURSE CATEGORY	L-T-P-S	3-0-3-0
AI 2522	75%		ESE	25% Internal Exam
LEARNING LEVEL	BTL		ASSESSMENT LEVEL	LB
COURSE OUTCOMES				
<p>1. The student will familiar with Avionic maintenance procedures, correct usage of tools and maintenance practices with safety precautions.</p> <p>2. The student will get confidence while handling aircraft's live equipment.</p> <p>3. The student can able to refer Aircraft Maintenance Manual's task procedures and familiar with its Safety Precautions and can able to apply his knowledge in a practical manner using manufacturer's instruction.</p>				
LIST OF EXPERIMENTS				hours
1. Activation of New Lead Acid Battery.				6
2. Generator Armature Open/Short circuit Testing.				4
3. Detailed Inspection of Aircraft Power Distribution system.				4
4. Pitot-Static System Leak Test.				4
5. Demonstration of Compass Swinging Procedure.				4
6. Bonding Check on all Electrically operated Instruments.				4
7. Insulation and Continuity Check.				4
TOTAL HOURS				30
Sl. No	DETAILS OF EQUIPMENT		Qty. Req.	Experiment No.
1.	Lead Acid Battery		1	1
2.	Thermometer		1	1
3.	Hydro meter,		1	1
4.	Armature		1	2
5.	Leak Tester		1	4
6.	Master Compass		1	5
7.	Compass Swinging Base		1	5
8.	Bonding Tester		1	6
9.	Megger (500 Volts DC)		1	7
10	Digital Multimeter		1	7

SEMESTER – VI

COURSE TITLE		IT FOR AVIATION AND SOFT SKILLS		CREDITS	3
COURSE CODE		COURSE CATEGORY		L-T-P-S	3-0-3-0
AI 2055		75%		ESE	25% Internal Exam
LEARNING LEVEL		BTL		ASSESSMENT MODEL	TE
S.No	COURSE OUTCOMES				CO
1.	Able to understand use of Information technology for optimal aircraft maintenance, repair, overhaul and MRO business.				CO1
2.	Able to understand financial, materials, manpower management and office management,				CO1
3.	Able to understand the requirements of Interview preparation and group discussion.				CO2
Prerequisites : Nil					
MODULE -1 :General (12 L)					
Information technology for optimal aircraft maintenance, repair and overhaul (MRO).A global perspective of the industry and its relationship with dynamic information technology knowledge in niche field of Aircraft Maintenance best practices. Aviation MRO with the necessary principles, approaches and tools to respond effectively and efficiently to the constant development of new technologies, both in general and within the aviation MRO profession.					
MODULE - 2 : MRO Business (12 L)					
The aviation MRO business and information technology - The era of bespoke systems - The vacuum and the minnows - The active vendors - The legacy solutions - Best-of-breed solutions - Integrated ERP solutions - The technologies - Airworthiness and information technology - The business view - The ideal solution.					
MODULE - 3 : Management of finance, materials, manpower (12 L)					
The paradigm - Life cycle of a commercial aircraft - Airframe maintenance life cycle - Aircraft engine maintenance life cycle - Aircraft components maintenance life cycle - Ground support equipment/fleet (GSE/F) - maintenance life cycle - Manage materials and logistics - Manage finance - Manage human resources - Manage facilities - Manage continuous improvements Analysis and Surveillance System) -Manage environment - Manage information technology - Manage external relationships - Manufacture of aircraft of Aircraft parts; organization structures.					
MODULE - 4 :Office management, Resume writing & presentation skills (12 L)					
Types of correspondence; Filing system; MIS; Letters- Formal/informal; Structure of business letters; Result oriented resume; Importance of presentation skills; visual aids and voice & picture integration; Body language and voice modulation.					
MODULE -5 : Interview preparation and group discussion (12 L)					
Preparation and attending interview; Employer expectation; General etiquette; Dressing sense;					

postures and gestures; Guidelines for group discussion; Evaluation.	
LAB / MINI PROJECT/FIELD WORK	
Nil	
TEXT BOOKS	
1.	Sahay. A “Leveraging information technology for optimal aircraft maintenance, repair and overhaul (MRO). Woodhead Publishing Limited