B.Tech Aeronautical Engineering

First Year (First Semester)

S. no	Course Code	Course Title	Credit	Nature of the Course
1.	ET – 101A	Mathematics – I	4	Theory
2.	BAS – 001	Applied Physics	4	Theory
3.	BAS – 002	Applied Chemistry	4	Theory
4.	BAS – 003	Technical Writing & Communication Skill	4	Theory
5.	BAE – 016	Engineering Mechanics	4	Theory
6.	BASL – 001	Lab -1: (Applied Science Lab for Physics & Chemistry)	3	Practical
7.	BASL – 002	Lab-2 (Applied Mechanics)	3	Practical
		Total	26	

First Year (Second Semester)

S.No.	Course Code	Course Title	Credit	Nature of the Course
1.	ET-101 B	Mathematics – II	4	Theory
2.	BAS – 004	Workshop Technology	4	Theory
3.	BAS- 005	Engineering Drawing	4	Theory
4.	BME – 021	Principles of Electrical and Electronic Science	4	Theory
5.	BAS – 006	Computer Fundamentals	4	Theory
6.	BASL – 003	Lab – 3: (Workshop Practical)	3	Practical
7.	BASL – 004	Lab – 4: (Engineering Drawing)	3	Practical
8.	BASL – 005	Lab–5:(Electrical & Electronics)	3	Practical
9.	BASL – 006	Lab–6:(Computer Fundamentals)	3	Practical
		Total	32	

Second Year (Third Semester)

S No	Course Code	Course Title	Credit	Nature of the Course
1.	BAS-007	CNS ATM Systems	4	Theory
2.	BAS – 008	Strength of Materials	4	Theory
3.	BME-018	Materials Science	4	Theory
4.	ET-201 A	Mechanics of Fluid	4	Theory
5.	BAS – 009	Introduction to Aeronautics	4	Theory
6.	BASL-007	Lab – 7 : (CNS – ATM Systems)	3	Practical
7.	ET – 574	Lab -8 : (Fluid Mechanics)	3	Practical
8.	BASL – 009	Lab-9 (Aero-Modeling)	3	Practical
9.	BASL-010	Lab-10 (Material Science)	3	Practical
		Total	32	

Second Year (Fourth Semester)

No.	Course Code	Course Title	credit	Nature of the Course
1.	BAS – 010	Machine Design	4	Theory
2.	ET – 201 B	Thermodynamics	4	Theory
3.	BAS – 001	Aircraft Systems & Airworthiness Requirements	4	Theory
4.	BAS – 012	Aerodynamics – I	4	Theory
5.	BAS – 13	Propulsion – I	4	Theory
6.	BASL – 011	Lab-11: (Thermodynamic)	2	Practical
7.	BASL – 012	Lab – 12 : (Aerodynamics Lab)	3	Practical
8.	BASL – 013	Lab-13: (Machine Design)	2	Practical
9.	BASL – 014	Industrial Training of 2 weeks during vacation	4	Practical
		Total	31	

Third Year (Fifth Semester)

S.No.	Course Code	Course Title	Credit	Nature of the Course
1.	ET – 102	Mathematics - III	4	Theory
2.	BAS – 014	Aircraft Structures	4	Theory
3.	BAS – 15	Aerodynamics - II	4	Theory
4.	BAS – 16	Propulsion - II	4	Theory
5.	BAS – 17	Flight Mechanics	4	Theory
6.	BASL – 015	Lab 14 : (Propulsion-II)	3	Practical
7.	BASL – 016	Lab–15: (Aerodynamics – II)	3	Practical
8.	BASL – 017	Lab-16:(Aircraft Structure)	3	Practical
		Total	29	

Third Year (Sixth Semester)

S.No.	Course Code	Course Title	Credit	Nature of the Course
1.	ET – 524	Principles of Engineering Management and Economics	4	Theory
2.	BAS – 018	Aircraft Safety and Maintenance Engineering	4	Theory
3.	BAS – 019	Aircraft Instruments	4	Theory
4.	BAS – 20	Basic Control Theory	4	Theory
5.	BASL – 018	Lab – 17 : (Basic Control Theory)	4	Practical
6.	BASL – 019	Lab - 18 : (CAD-CAM)	3	Practical
7.	BASL – 020	Professional Training/Report Writing / Presentation	3	Practical
		Total	29	

Fourth Year (Seventh Semester)

S.No.	Course Code	Course Title	Credit	Nature of the Course
1.	BAS – 021	Environmental Science	4	Theory
2.	BAS-022	Composite Materials	4	Theory
3.	BME – 006	Mechatronics	4	Theory
4.	BME – 007	Quality Engineering	4	Theory
5.	BMEL – 002	Lab-19: (Mechatronics)	3	Practical
6.	BASP-001	Project	9	Practical
		Total	28	

Fourth Year (Eight Semester)

S.No.	Course Code	Course Title	Credit	Nature of the Course
1.	BAS – 023	Aircraft Design / Launch / Rocket Design	4	Theory
2.	BAS – 024	Introduction to Rockets & Missiles	4	Theory
3.	BAS – 025	Space Dynamics	4	Theory
4.	Please refer table below	Elective	4	Theory
5.	BASP-002	Project on Aircraft on Aircraft Design / Launch vehicle or Rocket System Design	104	Project
		Total	26	

Course Code for the Elective Courses

S.No.	Course Code	Course Title	Credit
1.	BASE – 001	Helicopter Engineering	4
2.	BASE – 002	Rocket Propulsion	4
3.	BASE – 003	High Speed Aerodynamics	4
4.	BASE – 004	Flight Testing	4
5.	BASE – 005	Introduction to Computational Fluid Dynamics	4
6.	BASE – 006	Finite Elements Methods	3
7.	BASE – 007	Microprocessor	3
8.	BASE – 008	Applied Industrial Aerodynamics	3
		Total	29

AIRCRAFT MAINTENANCE ENGINEERING

(AVIONICS)

SEMESTER - I

Summary of syllabus: Theory and Practical

1. AIR LAW, AIRWORTHINESS REQUIREMENTS -I			
S.No	**CAR Ref:**	**DESCRIPTION**	**Hours :**
1		**AIR LAW, AIRWORTHINESS REQUIREMENTS -I (CAR Section - 2 Series A to I)**	**Allotted 110**
1.1	**Aircraft Manual (India)**	**Aircraft Act 1934:**	**1**
		Aircraft Rules 1937	
		Part I Preliminary, Part II General Conditions for flying	**1**
		Part III General Safety Conditions, Part IV Registration and Marking of	**1**
		Part V Personnel of Aircraft, Part VI Airworthiness	**1**
		Part VII Radio Telegraph Apparatus, Part VIII Aeronautical Beacons, Ground Lights and false lights, Part IX Log books	**1**
		Part X Investigation of Accidents and Incidents, Part XI Aerodromes, Part XII A Regulatory Provisions	**1**
		Part XII B Engineering, Inspection and Normal requirements other than Operations, Part XIII Air transport Services.	**1**
		Part XIII A Engineering , Inspection and Manual requirements, Owners or Operators, Part XIV General	**1**
		Schedule I: Areas over which flied by aircraft is prohibited	**3**
		Schedule II : Aircraft Personnel	
		CAR ON Rules of the Air	**2**
		The Indian Aircraft Rules 1920	**1**
		The Aircraft (Public Health) Rules 1954	**2**
		Notifications under Aircraft Act (Public Health) Rules 1954	**1**
		The Aircraft (Demolition of Obstructions caused by buildings and trees etc.	**1**
		The Aircraft (Carriage of dangerous goods) Rules 2003	**1**
		Statutory Notification effecting Aviation in India	**1**
1.2		Knowledge of Civil Aviation Requirements relating to airworthiness**,** **Aeronautical Information Circulars: Advisory Circulars: and AME Notices** issued by DGCA.CAR **amendments** and incorporation.	**5**
1.3	**CAR Sec 2 Series A**	**Procedure for Issue of Civil Airworthiness requirements and Responsibility of Operator vis a vis Airworthiness directorate**:	**1**
		Part I Cancelled	
		Part II Cancelled	
		Part III: Objects and targets of airworthiness Directorate of civil aviation department.	
		Part IV: Airworthiness regulation and safety oversight of engineering	**2**
1.4	**CAR Sec 2 Series B**	**Part I Approval of Check List, MEL, CDL** :	**2**
		Part II Minimum Equipments List/ CDL and preparation.	
		Part III Use of cockpit and emergency checklist.	

1. AIR LAW, AIRWORTHINESS REQUIREMENTS -I

1.5	**CAR Sec 2 Series C**	**Defect Recording, monitoring, Investigation and Reporting**:	**2**
		Part I Defect recording, reporting, investigation, rectification and analysis.	
		Part II Recording of inflight instrument reading and reporting of flight defect.	**1**
		Part III Reporting/rectification of defects observed on all aircraft except public transport aircraft.	**1**
		Part IV Analytical study of inflight instrument readings/recording of aircraft.	**1**
		Part V Maintenance control by reliability method.	
1.6	**CAR Sec Series D**	**Aircraft maintenance Programmes** :	**1**
		Part I Reliability program of engines.	
		Part II Aircraft Maintenance program and their approval	
		Part III On condition maintenance of engines.	**1**
		Part IVApproval of TBO and revision program.	**1**
		Part V Maintenance of fuel and oil uplift and consumption records of light aircraft engines.	**1**
		Part VI Fixing of routine maintenance periods of components, TBOs - initial as well as revision	**1**
		Part VII Cancelled	
	CAR 21	Certification procedure for aircraft and related products	**10**
		Subpart A - General Provisions Subpart B - Type Certificates And Restricted Type	**1**
		Subpart D - Changes To Type Certificates And Restricted Type Subpart E - Supplemental Type Certificates	**1**
		Subpart F - Production Without Production Organisation	**1**
		Subpart G - Production Organisation Approval For Products	**1**
		Subpart H - Certificates Of Airworthiness, Restricted Subpart I - Noise Certificates	**1**
		Subpart JA- Design Organization Approval – Products Or Subpart JB- Design Organization Approval – Parts And	**1**
		Subpart k - Parts And Appliances	**1**
		Subpart M – Repairs	**1**
		Subpart O - Indian Technical Standard Order Authorizations Subpart P - Permit To Fly	**1**
		Subpart Q - Identification Of Products Parts And Appliances AMC AND GM	**1**
1.7	**CAR Sec 2 Series**	**Approval of organizations**: E Part I Approval of organizations/Operators	**1**
	E	E Part II, III, IV & V Cancelled	
		E Part VI Cat E - Fuel, Lubricant and special petrolium products	**1**
		E Part VII Cancelled	
		E Part VIII Approval of organisation - Cat G-Training Schools/ Establishments	**1**
		E Part IX Requirements for infrastructure at stations other than parent base.	**1**

1. AIR LAW, AIRWORTHINESS REQUIREMENTS -I			
1.8	**CAR 145**	Approved Maintenance Organizations: General, Applicability, Scope, Application, Terms of approval, Facility requirements, Personnel	**5**
		Certifying Staff and appropriately qualified DGCA licensed Engineers, supporting staff, Equipment tools and materials.	**5**
		Acceptance of components, Maintenance data, Production planning, Certification of maintenance, Maintenance records, Occurring reporting, Safety and Quality Policy, Maintenance Procedure and quality system	**5**
		Maintenance Organisation Exposition, Privileges of the Organisation, limitations on the Organisation, Changes to the Organisation.	**5**
1.9	**CAR Sec 2 Series F**	**Airworthiness and Continued Airworthiness**	
		PART - I Procedures of registration of aircraft.	**1**
		PART - II Cancelled	
		PART - III Procedure and requirements for issue/ revalidation of C of A.	**1**
		PART - IV Cancelled	
		PART - V Supension of C of A and its subsequent revalidation	**1**
		PART - VI Rebuilding of aircraft.	**1**
		PART - VII Special Flight permits	**1**
		PART - VIII . Maintenance and certification of aircraft	**1**
		PART - IX Cancelled	
		PART - X Airworthiness of aging aircraft	**1**
		PART - XI Cancelled	
		PART - XII Inspection of wooden aircraft.	**1**
		PART - XIII Airworthiness requirements for gliders.	**1**
		PART - XIV, XV Registration and airworthiness of Micro light aircraft, Hot air Balloons.	**1**
		PART - XVI Approval of Flight manuals and their amendments.	**1**
		PART - XVII Pooling of aircraft parts by National Airlines of India with Foreign airlines.	**1**
		PART - XVIIIConstruction, Certification and operation of experimental / amateur built aircraft.	**1**
		PART - XIX Cancelled	
		PART - XX Age of aircraft to be imported for character hire or air taxi and other operations.	**1**
		PART - XXI Import/Export of aircraft, spares, item of equipment etc, for use on aircraft.	**1**
		PART - XXII Load and trim sheets- requirements thereof.	**1**

1. AIR LAW, AIRWORTHINESS REQUIREMENTS -I

1.10	**CAR Sec 2 Series H**	**Requirements of Aircraft Fuel, refilling of aircraft and Calibration of Aircraft fuels :**	
		Un usable fuel supply - calibration of fuel quantity gauge of aircraft,	**2**
		Aircraft fueling procedures.	
		Aviation fuel at airport-storage, handling and quality control.	**1**
1.11	**CAR Sec 2 Series I**	**Aircraft Instruments, Equipment and Accessories**:	**1**
		Aircrafts instruments overhaul and periodic inspections.	
		Aircraft equipment and instruments.	**1**
		Maintenance of test equipments.	**1**
		Airworthiness of Procedures for clean rooms and environments for aircraft systems/ accessories shop.	**1**
		Flight data recorders.	**1**
		Cockpit voice recorders	
		Ground Proximity Warning Systems (GPWS).	**1**
		Installation of airborne collision avoidance systems (ACAS).	**1**
1.12	**CAR M**	Continuing Airworthiness Requirements	10
		General	
		Section A - Technical Requirements	1
		Subpart A General	
		Subpart B Accountability	1
		Subpart C Continuing Airworthiness	1
		Subpart D Maintenance Standards	1
		Subpart E Components	1
		Subpart F Maintenance Organisation	1
		Subpart G Continuing Airworthiness Management	1
		Subpart H Certificate of Release to service	1
		Subpart I Airworthiness Review Certificates	1
		APPENDICIES	1

SYLLABUS FOR SEMESTER I (Theory)

2. AIRCRAFT MATERIALS AND HARDWARE - I

2	CAR Ref	AIRCRAFT MATERIALS AND HARDWARE - I	Hours 70
2.1	P2.1.1 Aircraft Materials - Ferrous	• Characteristics, properties and identification of common alloy steels used in aircraft;	5
		• Heat treatment and application of alloy steels;	3
		• Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	5
2.2	P2.1.2 Aircraft Materials - Non-Ferrous	Characteristics, properties and identification of common non-ferrous materials used in aircraft;	5
		• Heat treatment and application of non-ferrous materials.	3
		• Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	5
2.3	P2.1.3.2 Wooden structure	• Construction methods of wooden airframe structures;	1
		Characteristics, properties and types of wood and glue used in aeroplanes;	1
		Preservation and maintenance of wooden structure;	1
		Types of defects in wood material and wooden structures;	1
		The detection of defects in wooden structure; Repair of wooden structure.	2
2.4	P2.1.4 Corrosion :	Chemical fundamentals; • Formation by, galvanic action process, microbiological, stress;	5
		Types of corrosion and their identification;	5
		Causes of corrosion; • Material types, susceptibility to corrosion.	5
2.5	P2.1.5	**Fasteners**	
	P2.1.5.1 Screw threads :	Screw nomenclature;	3
		Thread forms, dimensions and tolerances for standard threads used in aircraft;	3
		• Measuring screw threads;	2
		Bolt types: specification, identification and marking of aircraft bolts, international standards;	5
		• Nuts: self locking, anchor, standard types	4
		• Machine screws : aircraft Specifications ;• • Studs: types and uses, insertion and removal	3
		Self tapping screws, dowels.	3

SYLLABUS FOR SEMESTER I (Theory)

3. ELECTRICAL FUNDAMENTALS - I

3	CAR Ref	Electrical fundamentals –I	Hours 70
3.1	P2.3.1 Electron Theory	Structure and distribution of electrical charges within: atoms, molecules, ions, compounds	3
		Molecular structure of conductors, semiconductors and insulators.	2
3.2	P2.3.2 Static Electricity and Conduction	Static electricity and distribution of electrostatic charges	1
		Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law	2
		Conduction of electricity in solids, liquids, gases and a vacuum.	2
3.3	P2.3.3 Electrical Terminology	The following terms, their units and factors affecting them:	2
		Potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.	3
3.4	P2.3.4 Generation of Electricity	• Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	5
3.5	P2.3.5 DC Sources of Electricit	• • Construction and basic chemical action of: primary cells,• • secondary Cells	2
		Lead acid cells	3
		Nickel cadmium cells, other alkaline cells	2
		Cells connected in series and parallel;•	2
		Internal resistance and its effect on a battery	2
		• • Construction, materials and operation of thermocouples	2
		• • Operation of photo-cells.	2
3.6	P2.3.6 DC Circuits	• • Ohms Law	2
		Kirchoff's Voltage and Current Laws	2
		• Calculations using the above laws to find resistance, voltage and current;	4

SYLLABUS FOR SEMESTER I (Theory)

3. ELECTRICAL FUNDAMENTALS - I

3.7	**P2.3.7 Resistance/ Resistor**	Resistance and affecting factors	**1**
		Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings •	**1**
		Resistors in series and parallel; • Calculation of total resistance using series, parallel and series parallel combinations	**2**
		Operation and use of potentiometers and rheostats •	**1**
		Operation of Wheatstone Bridge.• Positive and negative temperature coefficient conductance	**1**
		• • Fixed resistors, stability, tolerance and limitations, methods of construction; • Variable resistors, thermistors, voltage dependent resistors	**2**
		Construction of potentiometers and rheostats; • Construction of Wheatstone Bridge	**2**
3.8	**P2.3.8 Power**	• • Power,	**1**
		Work and energy (kinetic and potential);	**1**
		• • Dissipation of power by a resistor; Power formula;	**1**
		• • Calculations involving power, work and energy.	**2**
3.9	**P2.3.9 Capacitance/Capacitor**	• • Operation and function of a capacitor;	**1**
		• Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric • • constant,	**1**
		Working voltage, voltage rating	**1**
		Capacitor types, construction and function	**2**
		Capacitor colour coding	**2**
		Calculations of capacitance and voltage in series and parallel circuits	**2**
		Exponential charge and discharge of a capacitor, time • • constants; Testing of capacitors.	**1**

SYLLABUS FOR SEMESTER I (Theory)

4. BASIC AERODYNAMICS

4	CAR Ref	BASIC AERODYNAMICS	Hours 40
4.1	**P3.1.1 Physics of the Atmosphere**	International Standard Atmosphere (ISA), application to aerodynamics.	**2**
4.2	**P3.1.2 Aerodynamics**	Airflow around a body	**1**
		Boundary layer	**1**
		Laminar and turbulent flow, free stream flow, relative airflow,	**1**
		Upwash and downwash, vortices, stagnation; •	**1**
		The terms: camber, chord, mean aerodynamic chord,	**2**
		Profile (parasite) drag, induced drag,	**2**
		Centre of pressure, • angle of attack,	**2**
		Wash in and wash out,	**2**
		Fineness ratio, wing shape and aspect ratio;	**2**
		Thrust, Weight, Aerodynamic Resultant;	**2**
		Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall;•	**2**
		Aerofoil contamination including ice, snow, frost.	**2**
4.3	**P3.1.3 Theory of Flight**	Relationship between lift, weight, thrust and drag;	**2**
		Glide ratio; • • Steady state flights,	**2**
		Performance;• • Theory of the turn;	**2**
		• Influence of load factor: stall, flight envelope and structural limitations; • •	**2**
		Lift augmentation.	**2**
4.4	**P3.1.4 Flight Stability and Dynamics**	• • Longitudinal stability (active and passive).	**3**
		Lateral stability (active and passive).	**3**
		Directional stability (active and passive).	**2**

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SYLLABUS FOR SEMESTER I (Theory)

5. MAINTENANCE PRATICES - I

5	CAR Ref	**MAINTENANCE PRATICES - I**	**Hours 60**
5.1	**P2.2.1 Safety Precautions- Aircraft and Worksho**	Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals.	**3**
		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.	**2**
5.2	**P2.2.2 Worksho p**	Care of tools, control of tools, use of workshop materials;	**2**
		Dimensions, allowances and tolerances, standards of workmanship;	**2**
		Calibration of tools and equipment, calibration standards.	**1**
5.3	**P2.2.3 Tools**	Common hand tool types;	**2**
		Common power tool types;	**2**
		Operation and use of precision measuring tools;	**1**
		Lubrication equipment and methods.	**1**
		Operation, function and use of electrical general test Equipment.	**1**
5.4	**P2.2.5 Engineeri ng Drawing:**	Drawing types and diagrams, their symbols, dimensions, tolerances and projections;•	**5**
		Identifying title block information • • Microfilm, microfiche and computerized presentations;	**5**
	Engineeri ng Drawings , Diagrams and Standard s	Specification 100 of the Air Transport Association (ATA) of America;	**5**
		Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL	**5**

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SYLLABUS FOR SEMESTER I (Theory)

5. MAINTENANCE PRATICES - I

5	**CAR Ref**	**MAINTENANCE PRATICES - I**	**Hours 60**
5.5	**P2.2.6 Fits and Clearances**	Drill sizes for bolt holes, classes of fits;	**2**
		Common system of fits and clearances;	**2**
		Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear;	**2**
		Standard methods for checking shafts, bearings and other parts.	**2**
5.6	**P2.2.15 Welding, Brazing, Soldering and Bonding**	Soldering methods; inspection of soldered joints.	**3**
		Welding and brazing methods;	**5**
		Inspection of welded and brazed joints;	**5**
		Bonding methods and inspection of bonded joints.	**2**

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SYLLABUS FOR SEMESTER I (Practicals)

1. MAINTENANCE PRACTICES - I

1	CAR Ref	MAINTENANCE PRACTICES - I	150 Hours
1.1	P2.2.1 Safety Precautions- Aircraft and	Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals.	3
		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.	2
1.2	P2.2.2 Workshop Practices	Care of tools	5
		control of tools, use of workshop materials	5
		Dimensions Allowances and tolerances Standards of workmanship	5
		Calibration of tools and equipment, calibration standards.	5
1.3	P2.2.3 Tools	Common hand tool types	6
		Common power tool types	6
		Operation and use of precision measuring tools	6
		Lubrication equipment and methods.	6
		Operation, function and use of electrical general test Equipment.	6
1.4	P2.2.5 Engineering Drawing: Engg Drawings Diagrams and Standard	Drawing types and diagrams, their symbols	4
		dimensions, tolerances and projections	4
		Identifying title block information	4
		• • Microfilm, microfiche and computerized presentations	4
		Specification 100 of the Air Transport Association (ATA) of America	5
		Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL• •	5
		Wiring diagrams and schematic diagrams	4
1.5	P2.2.6 Fits and Clearances	Drill sizes for bolt holes, classes of fits	2
		Common system of fits and clearances	2
		Schedule of fits and clearances for aircraft and engines Limits for bow, twist and wear	2
		Standard methods for checking shafts, bearings and other parts.	2

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SYLLABUS FOR SEMESTER I (Practicals)

1. MAINTENANCE PRACTICES - I

1	CAR Ref	MAINTENANCE PRACTICES - I	150 Hours
1.6	P.2.2.14.1 **Sheet Metal shop:**	Types of Sheet metal bending,	**3**
		Different types of Sheet metal cutting,	**4**
		Square cutting practice	**3**
		Riveting practice	**3**
		Bull joint practice	**4**
		Flange Joint practice	**3**
		Single back plate riveting practice	**4**
		Double back place riveting practice	**3**
		Drilling practice	**4**
1.7	**P2.2.15** **Welding, Brazing,**	Soldering methods; inspection of soldered joints.	**8**
		Welding and brazing methods;	**8**
		Inspection of welded and brazed joints;	**5**
		Bonding methods and inspection of bonded joints.	**5**

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SYLLABUS FOR SEMESTER I (Practicals)

2. MATERIALS AND HARD WARE-I

2	CAR Ref	**Materials and Hard Ware**:	**80 Hours**
2.1	**P2.1.1 (a)**	Identification of Ferrous materials and Non Ferrous materials,	**7**
		Demonstration of Heat treatment and application of alloy steels.	**8**
	P2.1.1 (b)	Testing of Ferrous materials for Hardness,	**3**
		Tensile Strength,	**3**
		Fatigue Strength, and	**4**
		Impact resistance.	**5**
2.2	**P2.1.2**	Testing of Non Ferrous materials for Hardness,	**5**
		Tensile Strength, Fatigue Strength, and Impact resistance.	**3**
2.3	**P2.1.3.2**	Identification of types of defects in wood materials and wooden structures.	**6**
		Repair of wooden structures.	**6**
2.4	**P2.1.4**	Types of Corrosion and their Identification,	**5**
		Protection and Preventive treatment.	**5**
2.5	**P2.1.5.1**	Identification of various thread forms,	**5**
		Measuring Screw Threads.	**5**
2.6	**P2.1.5.1**	Identification of different Bolt types,	**5**
		Nuts, machine Screws, Studs, Self Tapping Screws.	**5**

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SYLLABUS FOR SEMESTER I (Practicals)

3. ELECTRICAL FUNDAMENTALS

3	CAR Ref	ELECTRICAL FUNDAMENTALS	Hours: 80
3.1	**P 2.3.4**	Generation of Electricity .	**5**
3.2	**P 2.3.5**	To measure potential gradient between EMF and Potential difference of a cell.	**5**
		To study the dependence of a internal resistance of a primary cell.	**5**
		Construction details of Lead Acid Battery	**5**
		Construction details of NiCad batteries	**5**
3.3	**P 2.3.6**	To establish Current, Voltage, relationship verified and Ohms Law.	**5**
		To use a Multimeter for different purposes	**5**
		Familiarization of Kirchoff's Laws	**4**
3.4	**P 2.3.7**	To find unknown Resistance using Wheatston`s Bridge.	**4**
		Familiarization of Potentiometers and Rheostats.	**4**
		Familiarization of various types of resistors	**5**
		Familiarization of Series Circuit	**5**
		Familiarization of Parallel Circuit	**5**
		Colour Coding of Resistors	**5**
3.5	**P 2.3.9**	Familiarization of various types of Capacitors	**4**
		Colour Coding of Capacitors.	**4**
		Charging and Discharging of Capacitors	**5**

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SYLLABUS FOR SEMESTER I (Practicals)

4. BASIC AERODYNAMICS

4	CAR Reference	BASIC AERODYNAMICS	Hours : 40
4.1	P 3.1.2	Demonstration of Bernoulli's principle and its applications.	1
		Identification of different Aero foils , primary and secondary controls	3
		Demonstration of Boundary Layer, Laminar, Turbulent flow, AOA, Washout, Aerofoil Contamination including Ice, Snow and Frost. (with the help of Video films and other aids.)	8
4.2	P 3.2.1.1	Main parts of aircraft, Femiliarisation of Basic Aircraft Controls (Response of Control Surface for the action of Control Column)	5
4.3	P 3.1.3	Demonstration of Drag and various types of drags.	5
		Identification of various Lift Augmentation devices- Flaps, Slats, and different types of Flaps.	5
		L-D Curves for Basic understanding of Lift Drag relation and understanding of Four Forces acting on Aircraft in flight.	8
4.4	P 3.1.4	Demonstration of Positive, Negative and Neutral Stability and Longitudinal, Lateral and Directional Stability (With the help of Video films and other aids).	5

SEMESTER – II
Summary of syllabus: Theory and Practical

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SYLLABUS FOR SEMESTER I I (Theory)

1. AIR LAW, AIRWORTHINESS REQUIREMENTS-II

1	**CAR**	**AIR LAW, AIRWORTHINESS REQUIREMENTS-II**	**Hours:**
	Ref	(Section 2 Series L to X)	**90**
1.1	**SERIES**	PART - I Issue of AME Licenses, its classification and experience	**2**
		PART - II Examination for issue/Extension of AME License and BAMEC procedures thereof. Classification and	**2**
	Aircraft Maintenance Engineer – Licensing	PART - III certification, responsibilities of AME License for helicopters.	**1**
		PART - IV Endorsement of AME Licenses.	**1**
		PART - V Certification privileges of AMEs.	**1**
		PART - VI Grant of Open AME licenses.	**1**
		PART - VII Procedure for renewal of AMEs license.	**1**
		PART - VIII Issue of BAMAC.	**1**
		PART - IX Issue of authorization to AMEs/ Approved personnel.	**1**
		PART - X Grant of approvals.	**2**
		PART -XI Approval of flight engineer examiner and check flight engineer.	**1**
		PART - XII Approval of GET Scheme.	**1**
		PART - XIII Payment /Non payment of fees for issue of duplicate	**2**
		PART - XIV Issue of C of C.	**1**
		PART - XV Procedure for issue/renewal/ extension of SFEs/ FE license,	**2**
		PART - XVI Validation of foreign licenses of Aircraft Maintenance Engineers.	**2**
1.2	**SERIES – M**		**5**
	Mandatory Modification And Inspections	PART - I Mandatory Modification And Inspections	

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1. AIR LAW, AIRWORTHINESS REQUIREMENTS-II

1.3	**SERIES – O**	PART - I Minimum Requirements to be compiled with by operators light aircraft,	**2**
	Operational Requirement For Aircraft	PART - II Operation of General Aviation – Aeroplanes	**2**
		PART - III Cancelled	
		PART - IV Cancelled	
		PART - V Cancelled	
		PART - VI Registration, Airworthiness and operation of hang gliders and powered hang gliders	**4**
		PART - VII Exit Row Seating	**2**
		PART - VIII Airworthiness ,maintenance and operational requirements for	**2**
		ETOPS for commercial Air Transport Operations,	**2**
		PART - IX Requirements for operation of aircraft in MNPS airspace	**4**
		PART - X Requirements for preparation of Operation Manuals,	**2**
		PART - XI Requirements for implementation of RVSM	**2**
		PART - XII Aircraft Requirements for required navigational performance (RNP) /Air Navigation (RNAV)	**2**
		PART - XIII Requirements for evaluation Certification and maintenance of aircraft Flight Simulators and Synthetic flight training devices	**2**
		PART - XIV Airworthiness and maintenance requirement for Category II and Category IIIA operations	**2**
1.4	**SERIES**	PART - I Aircraft Radio Equipment:	**2**
	Airborne		
		PART - II Installation of Communication, Navigation and Radar	**2**
		PART - III Maintenance of Communication, Navigation and Radar Equipment.	
		PART - IV Installation Mod A / C and Mode S transponders.	**2**
		PART - V Control of Electromagnetic interference in modern aircraft.	**2**
		PART - VI Approval of airborne GPS installations in aircraft.	**2**
1.5	**SERIES**	PART - I Storage conditions and storage/Service life of rubber parts and	**3**
	– S	aircraft components containing rubber parts	
	Storage	PART - II Fixations of calendar period for determining overhaul life of	**3**
	of	Reciprocating engine	

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1. AIR LAW, AIRWORTHINESS REQUIREMENTS-II

1.6	**SERIES Flight Testing of Aircraft:**	**PART - I** Flight Testing of (Series) Aircraft for the issue of C of A.	**2**
		PART - II Flight testing of aircraft for which a C of A had been previously issued	**2**
1.7	**SERIES – X**	PART - I Cancelled	
	Miscellaneous Requirements	PART - II Requirements of weight and balance control of aircraft.	**2**
		PART - III Provision of first aid kit and physician kits in aircraft as applicable.	**1**
		PART - IV Use of furnishing material in aircraft	**2**
		PART - V Grant of concession.	**2**
		PART -VI Aircraft log books	**2**
		PART - VII Documents required to be carried on board.	**2**
		PART - VIII Procedure for Issue of taxi permit	**2**
		PART - IX Cancelled	**2**

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SYLLABUS FOR SEMESTER II (Theory)

2. HUMAN PERFORMANCE - II

2.1	**Human Performance**	**Hours**
	1.1.1. General:	**3**
	1.1.2. The Need to take human factors in to account	
	1.1.3. Incidents attribute to Human factors/Human Errors	
	1.1.4 Murphy's Law	
2.2	**Human performance and limitations**	**3**
	1.2.1. Vision	
	1.2.2. Hearing	
	1.2.3. Information Processing	
	1.2.4. Attention and perception	
	1.2.5. Memory	
	1.2.6. Claustrophobia and physical access	
2.3	**Social Psychology**	**4**
	1.3.1. Responsibility: Individual and Group	
	1.3.2. Motivation and De-motivation	
	1.3.3. Peer pressure	
	1.3.4. Culture Issues	
	1.3.5. Team Working	
	1.3.6. Management Supervision and Leadership	
2.4	**Factors and Affecting Performances**	**4**
	1.4.1. Fitness/health	
	1.4.2. Stress: Domestic and work related	
	1.4.3. Time pressure and dead lines	
	1.4.4. Work load: Over load and under load	
	1.4.5. Sleep and Fatigue, shift work	
	1.4.6. Alcohol, Medication, Drug abuse	
2.5	**Physical Environment**	**3**
	1.5.1. Noise and fumes	
	1.5.2. Illumination	
	1.5.3. Climate and Temperature	
	1.5.4. Motion and Vibration	
	1.5.5. Working Environment	
2.6	**Tasks**	**3**
	1.6.1. Physical work	
	1.6.2 Repetitive task	
	1.6.3 Visual Inspection	
	1.6.4. Complex Systems	

SYLLABUS FOR SEMESTER II (Theory)

2. HUMAN PERFORMANCE - II

2.7	**Communication**	**4**
	1.7.1. Within and between teams	
	1.7.2. Work logging and recording	
	1.7.3. Keeping up to date, currency	
	1.7.4 Dissemination of information	
2.8	**Human Error**	**3**
	1.8.1. Error model and theories	
	1.8.2. Types of error in maintenance task	
	1.8.3. Implementation of error (i.e accidents)	
	1.8.4. Avoiding and managing errors	
2.9	**Hazards in the work place**	**3**
	1.9.1 Recognizing and avoiding hazards	
	1.9.2 Dealing with emergencies	

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SYLLABUS FOR SEMESTER II (Theory) AIRCRAFT MATERIALS AND HARD WARE - I

3	CAR Ref	AIRCRAFT MATERIALS AND HARD WARE - II	Hours : 80
3.1	P2.1.5.2 Locking devices	Tab and spring washers	2
		Locking plates	1
		Split pins	1
		Pal-nuts	1
		Wire locking	1
		Quick release fasteners	1
		Keys	1
		Circlips	1
		Cotter pins	1
3.2	P2.1.5.3 Aircraft rivets	Types of solid and blind rivets: specifications	4
		Identification	3
		Heat treatment.	3
3.3	P2.1.5.4 Pipes and Unions	Identification of, and types of rigid and flexible pipes and their connectors used in aircraft	5
		Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	5
3.4	P2.1.5.5 Springs	Types of springs, materials, characteristics and applications	2
3.5	P2.1.6 Bearings	Purpose of bearings, loads, material, construction Types of bearings and their application.	8
3.6	P2.1.7 Transmissions	Gear types and their application; Gear ratios	2
		Reduction and multiplication gear systems	2
		Driven and driving gears	2
		Idler gears	1
		Mesh patterns	1
		Belts and pulleys	1
		Chains and sprockets.	1
3.7	P2.1.8 Control Cables	Types of cables	2
		End fittings	2
		Turnbuckles and compensation devices	2
		Pulleys and cable system components	2
		Bowden cables	1

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SYLLABUS FOR SEMESTER II (Theory)

3. AIRCRAFT MATERIALS AND HARD WARE - II

3	CAR Ref	AIRCRAFT MATERIALS AND HARD WARE - II	Hours : 80
3.8	P2.1.9 Electrical Cables and Connectors	Cable types	3
		Construction and characteristics	3
		High tension and co-axial cables	3
		Crimping	2
		Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling	2
		Identification codes	2
3.9	P 2.1.3.1Composite and non-metallic other than wood and	(a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents.	2
		(b) The detection of defects/deterioration in composite and non-metallic material.	2
		Repair of composite and non-metallic material.	1

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SYLLABUS FOR SEMESTER II (Theory)

4. ELECTRONIC FUNDAMENTALS & DIGITAL TECHNIQUES-I

4	CAR Ref	ELECTRONIC FUNDAMENTALS & DIGITAL TECHNIQUES-I	Hours:70
4.1	P2.4.1.2 Transistors	• • Transistor symbols ;Component description and orientation;	1
		Transistor characteristics and properties.•	1
		Construction and operation of PNP and NPN transistors;•	1
		Base, collector and emitter configurations; •	1
		Testing of transistors.	1
		• Basic appreciation of other transistor types and their uses.	1
		Application of transistors: classes of amplifier (A, B, C);•	1
		Simple circuits including: bias, decoupling, feedback and stabilisation;•	1
		Multistage circuit principles: cascades, push-pull, oscillators, multivibrators,	1
		Flip-flop circuits.	1
	P2.4.1.3 Integrated Circuits	• • Description and operation of logic circuits and linear circuits/operational amplifiers.	2
		• • Description and operation of logic circuits and linear circuits;•	2
		Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; •	1
		Operation and amplifier stages connecting methods: resistive	2
		capacitive, inductive (transformer), inductive resistive (IR), direct;•	2
		Advantages and disadvantages of positive and negative feedback.	1
4.3	P2.4.2 Printed Circuit Boards: • •	Description and use of printed circuit boards.	5
4.4	P2.4.3 Servomechanisms	• • Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers;•	3
		Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.	2
		Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, dead band;	5
		• • Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters,• capacitance transmitters, synchronous transmitters;	4
		• Servomechanism defects, reversal of synchro leads, hunting.	1

4.5	**P2.5.2 Numberi n g Systems**	Numbering systems: binary, octal and hexadecimal;	**5**
		• Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.	**5**

SYLLABUS FOR SEMESTER II (Theory)

4. ELECTRONIC FUNDAMENTALS & DIGITAL TECHNIQUES-I

4.6	**P2.5.4 Data Buses**	• Operation of data buses in aircraft systems,	**3**
		knowledge of ARINC and other specifications.	**2**
4.7	**P2.5.5 Logic Circuits**	• • Identification of common logic gate symbols, tables and equivalent circuits;• • Applications used for aircraft systems, schematic diagrams.	**3**
		• • Interpretation of logic diagrams.	**2**
4.8	**P2.5.6 Basic Compute r Structure**	• Computer terminology (including bit, byte, software, hardware,	**2**
		CPU, IC, and various memory devices such as RAM, ROM, PROM)	**3**
		• Computer technology (as applied in aircraft systems).• Computer related terminology	**2**
		Operation, layout and interface of the major components in a	**2**
		Micro computer including their associated bus systems;	**2**

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SYLLABUS FOR SEMESTER II (Theory)

4. ELECTRONIC FUNDAMENTALs - II

5		**ELECTRICAL FUNDAMENTALS-II**	**Hours: 80**
5.1	**P2.1.9 Electrical.**	• Cable types, construction and characteristics; High tension and co-axial cables; • • Crimping; • Connector types, pins, plugs, sockets, insulators,current and voltage rating, coupling, identification codes.	**5**
5.2	**P2.2.7 Electrical Cables and Connectors**	• 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;• • Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.	**5**
5.3	**P2.3.12 DC Motor/Generator**	• Basic motor and generator theory	**2**
		Construction and purpose of components in DC generator	**2**
		• Operation of, and factors affecting output and direction of current flow in DC generators;	**3**
		• Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors;	**2**
		Series wound, shunt wound and compound motors;	**3**
		Starter Generator construction.	**3**
5.4	**P2.3.13 AC Theory**	Sinusoidal waveform: phase, period, frequency, cycle;	**3**
		Instantaneous, average, root mean square, peak, peak to peak current values	**3**
		Calculations of these values, in relation to voltage, current and power Triangular/Square waves	**3**
		;• Single/3 phase principles.	**3**
5.5	**P2.3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits**	• Phase relationship of voltage and current in L, C and R• circuits,	**2**
		Parallel, series and series parallel;	**2**
		• Power dissipation in L, C and R circuits; •	**2**
		Impedance, phase angle, power factor and current calculations;	**2**
		True power, apparent power and reactive power calculations.	**2**
		• Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers	**2**

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SYLLABUS FOR SEMESTER II (Theory)

4. ELECTRONIC FUNDAMENTALs - II

5	CAR Ref	ELECTRICAL FUNDAMENTALS-II	Hours: 80
5.6	**P2.3.15 Transformers**	• Transformer construction principles and operation;	**1**
		Transformer losses and methods for overcoming them;	**1**
		Transformer action under load and no-load conditions;•	**1**
		Power transfer, efficiency, polarity markings;	**1**
		Calculation of line and phase voltages and currents;	**1**
		Calculation of power in a three phase system	**1**
		Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers	**2**
5.7	**P2.3.16 Filters**	Operation, application and uses of the following filters:	**3**
		low pass, high pass, band pass, band stop.	**2**
		• **Rotation of loop in a magnetic field and waveform produced;**	**2**
		Operation and construction of revolving armature and revolving field type	**2**
		AC generators;	**2**
		Single phase, two phase and three phase alternators;	**2**
		Construction, principles of operation and characteristics of: AC synchronous	**3**
		and induction motors both single and polyphase;	**2**
		• **Methods of speed control and direction of rotation;**	**3**

SYLLABUS FOR SEMESTER I I (PRACTICALS)

1. AIRCRAFT MATERIALS AND HARDWARE II

1	CAR Ref	AIRCRAFT MATERIALS AND HARDWARE II	Hours: 150
1.1	P 2.1.5.2	Identification of locking devices: Tab and Spring washers	4
		Identification of Locking plates	4
		Identification of Split Pins	3
		Identification of Pal-nuts	4
		Identification of Wire locking	3
		Identification of Quick release fastener	3
		Identification of Keys	3
		Identification of Circlips	3
		Identification of Cotter pins	3
		Practicing of various locking methods for above locking devices: Wire locking types	10
		Safety precautions.	10
1.2	P 2.1.5.3	Identification of Solid and Blind rivets and their specifications.	10
1.3	P 2.1.5.4	Pipes and Unions: Identification of Rigid and Flexible pipes and their connectors used in aircraft.	10
		Identification of Standard Unions for Aircraft hydraulic, Fuel, Oil, Pneumatic and air system pipes.	15
		Fabrication process of pipes.	10
1.4	P 2.2.12	Identification of various types of Gears	5
		Pulleys	5
		Belts	5
		Sprockets	5
1.5	P 2.2.13	Identification of various types of aircraft control cables	7
		End fittings	7
		Turn buckles, etc. including swaging procedure	6
1.6	P 2.2.14.2	Identification of Composite and non metallic materials other than used in aircrafts.	5
		Detection of defects/ Deterioration in Composites and non metallic material	5
		Repair of Composites and non metallic material.	5

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SYLLABUS FOR SEMESTER I I (PRACTICALS)

2. ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES

2		**ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES**	**Hours:110**
2.1	**P2.4.1.2**	Identification of Transistors, Component description and orientation	**10**
		To Identify the box of Collector and confirm using Multimeter.	**10**
		Construction and Operation of PNP Transistors	**5**
		Construction and Operation of NPN Transistors.	**5**
		Testing of Transistors.	**10**
		Familiarisation of Push Pull Oscillators,	**5**
		Familiarisation of multi vibrators,	**5**
		Familiarisation of flip flop circuits	**5**
2.2	**P 2.4.1.3**	Identification of a diode, LED, LCD, IC, Resistor.	**5**
		Familiarisation of integrator	**5**
		Familiarisation of Differentiator	**5**
		Familiarisation of Voltage Follower	**5**
		Familiarisation of Comparator.	**5**
2.3	**P 2.4.1.3**	Operation and Amplifier stages connecting methods: Resistive, Capacitive, Inductive, Inductive resistive, Direct	**10**
2.4	**P 2.4.2**	Description and use of Printed Circuit Boards.	**5**
2.4	**P 2.5.5**	Description and operation of Logic Circuits	**10**
		Description and operation of Linear Circuits/Operational Amplifier.	**5**

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SEMESTER I I (PRACTICALS)

ELECTRICAL FUNDAMENTALS - II

3		**ELECTRICAL FUNDAMENTALS - II**	**Hours:90**
3.1	**P 2.2.7**	Familiarisation with various electrical tools used in workshop	**6**
		Demonstration of Wire Stripping	**6**
		Demonstration of Wire Stripping with different types of cables	**6**
		Demonstration of wire Crimping and its testing.	**6**
		Demonstration Connector Pin removal and Insertion.	**6**
		Demonstration of Wiring Protection techniques.	**6**
		Insulation check using Mega Ohm Meter, Continuity check by Avo Meter.	**6**
		Familiarisation of Plugs and Sockets, insulators.	**6**
3.2	**P 2.2.9**	Continuity, Insulation and Bonding Techniques and testing of electrical cables	**6**
		Testing an installation of Coaxial Cable.	**6**
		Identification of various types of Cables and Connectors.	**6**
3.3	**P 2.3.12**	To Prove Faraday's Law.	**6**
3.4	**P 2.3.15**	Types of Transformers.	**6**
3.5	**P 2.3.17**	Principle and Operation of DC Generator	**6**
		Principle and Operation of Alternator.	**6**

SEMESTER - III

Summary of syllabus Theory and Practical training

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SYLLABUS FOR SEMESTER III(THEORY)

ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES – II

1		**ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES - II**	**Hours:80**
1.1	**P 2.5.1**	Electronic Instrument Systems	5
		• • Typical systems arrangements and	**2**
		cockpit layout of electronic instrument systems.	**3**
1.2	**P 2.5.3**	Data Conversion	**6**
		• • Analogue Data, Digital Data;	**2**
		• • Operation and application of analogue to digital,	**4**
		and digital to analogue converters, inputs and outputs,	
		limitations of various types.	
1.3	**P 2.5.7**	Microprocessors	**6**
		• • Functions performed and overall operation of a microprocessor;	**2**
		• • Basic operation of each of the following	**4**
		microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	
1.4	**P 2.5.8**	Integrated Circuits	**6**
		• • Operation and use of encoders and decoders;	**2**
		• • Function of encoder types;	**2**
		• • Uses of medium, large and very large scale integration.	**2**
1.5	**P 2.5.9**	Multiplexing	**5**
		• • Operation, application and identification in logic	**5**
		diagrams of multiplexers and demultiplexers.	
1.6	**P 2.5.10**	Fibre Optics	15
		• • Advantages and disadvantages of fibre optic data transmission over electrical wire propagation;	2
		• • Fibre optic data bus	**3**
		• • Fibre optic related terms;	**3**
		• • Terminations;	**3**
		• • Couplers, control terminals, remote terminals;	**2**
		• • Application of fibre optics in aircraft systems.	**2**

SYLLABUS FOR SEMESTER III(THEORY)

ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES – II

1.7	**P 2.5.11**	Electronic Displays	**4**
		• • Principles of operation of common types of displays	
		used in modern aircraft, including Cathode Ray Tubes,	**4**
		Light Emitting Diodes and Liquid Crystal Display	
1.8	**P 2.5.12**	Electrostatic Sensitive Devices	**9**
		• • Special handling of components sensitive to	**3**
		electrostatic discharges;	
		• • Awareness of risks and possible damage,	**3**
		component and	
		personnel an ti-static protection devices.	
		• • Basic operation of each of the following	**3**
		microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	
1.9	**P 2.5.13**	Software Management Control	**3**
		• • Awareness of restrictions, airworthiness	
		requirements and possible catastrophic effects of unapproved changes to software programmes.	
1.1	**P 2.5.14**	Electromagnetic Environment	**6**
		• • Influence of the following phenomena on	**2**
		maintenance practices for electronic system	
		• • EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity	**3**
1.11	**P 2.5.15**	**Typical Electronic/Digital Aircraft Systems**	**14**
		• • General arrangement of typical electronic/digital	**1**
		aircraft systems and associated BITE(Built In Test	
		Equipment) testing such as:	
		• • ACARS-ARINC Communication and Addressing and Reporting System	**2**
		• • ECAM-Electronic Centralised Aircraft Monitoring	**1**
		• • EFIS-Electronic Flight Instrument System	**1**
		• • EICAS-Engine Indication and Crew Alerting System	**1**
		• • FBW-Fly by Wire	**1**
		• • FMS-Flight Management System	**2**
		• • GPS-Global Positioning System	**2**
		• • IRS-Inertial Reference System	**1**
		• • TCAS-Traffic Alert Collision Avoidance System	**2**

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SEMESTER I II (THEORY)

2. AIRCRAFT ELECTRICAL SYSTEM - I

2		**AIRCRAFT ELECTRICAL SYSTEM - I**	**Hours:80**
2.1	**P 3 Av 2.5**	**Electrical Power (ATA 24)** • • Batteries Installation and Operation;	**5**
		• • DC power generation	**10**
		• • AC power generation;	**10**
		• • Emergency power generation;	**10**
		• • Voltage regulation;	**10**
		• • Power distribution;	**10**
		• • Inverters, transformers, rectifiers;	**10**
		• • Circuit protection;	**5**
		• • External/Ground power.	**10**

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SYLLABUS FOR SEMESTER I II (THEORY)

3.AIRCRAFT INSTRUMENT SYSTEM - I

3		**AIRCRAFT INSTRUMENT SYSTEM - I**	**Hours:60**
3.1	**P 3 Av 2.8**	Instrument Systems (ATA 31) • • Classification;	**4**
		• • Atmosphere;	**2**
		• • Terminology;	**2**
		• • Pressure measuring devices and systems;	**5**
		• • Pitot static systems;	**5**
		• • Altimeters;	**4**
		• • Vertical speed indicators;	**4**
		• • Airspeed indicators;	**4**
		• • Machmeters;	**5**
		• • Altitude reporting/alerting systems;	**2**
		• • Air data computers;	**3**
		• • Instrument pneumatic systems	**5**
		• • Direct reading pressure and temperature gauges;	**5**
		• • Temperature indicating systems;	**5**
		• • Fuel quantity indicating systems;	**5**

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SYLLABUS FOR SEMESTER III (THEORY)

4. COMMUNICATION & NAVIGATION SYSTEM - I

		COMMUNICATION & NAVIGATION SYSTEM - I	**Hours:80**
4.1	**P 3 Av 2.4**	**Communication/Navigation (ATA 23/34)**	**20**
		• • Fundamentals of radio wave propagation, antennas, transmission	
		• • lines, communication, receiver and transmitter	**60**
		Simple Radio Reciever and explanation	5
		Inter communication System in A/b Radio	5
		H/F R/T function & purpose of the system	5
		VHF R/T function & purpose of the system	10
		Antenna theory explanation & different types of antennas available in A/b Radio equipments	15
		Types of Transmission lines used in A/b radio communication system	5
		Simple B/D of Transmitter & Receiver, including B/D & function of trans receiver used in A/b Radio/Radar equipments	**15**

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SYLLABUS FOR SEMESTER I II (THEORY)

5.MAINTENANCE PRACTICES - I I

		MAINTENANCE PRACTICES - I I	**Hours:50**
5.1	**P 2.2.8**	Riveting • • Riveted joints, rivet spacing and pitch;	**3**
		• • Tools used for riveting and dimpling;	**2**
		• • Inspection of riveted joints.	**3**
5.2	**P 2.2.9**	Pipes and Hoses • • Bending and belling/flaring aircraft pipes;	**5**
		• • Inspection and testing of aircraft pipes and hoses;	**3**
		• • Installation and clamping of pipes.	**2**
5.3	**P 2.2.10**	10 Springs • • Inspection and testing of springs.	**4**
5.4	**P2.2.11**	Bearings • • Testing, cleaning and inspection of bearings;	**3**
		• • Lubrication requirements of bearings;	**2**
		• • Defects in bearings and their causes.	**3**
		• • 28.11.2003 L 315/100 Official Journal of the European Union EN	**2**
5.5	**P2.2.12**	Transmissions • • Inspection of gears, backlash;	**3**
		• • Inspection of belts and pulleys, chains and sprockets	**4**
		• • Inspection of screw jacks, lever devices, push-pull rod systems.	**3**
5.6	**P2.2.13**	Control Cables • • Swaging of end fittings;	**4**
		• • Inspection and testing of control cables;	**2**
		• • Bowden cables; aircraft flexible control systems.	**2**

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SYLLABUS FOR SEMESTER III(Practicals)

ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES – II

1		**ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES - II**	**Hours:80**
1.1	**P 2.5.1**	Electronic Instrument Systems	5
		• • Typical systems arrangements and cockpit layout of electronic instrument systems.	**2 3**
1.2	**P 2.5.3**	Data Conversion	**6**
		• • Analogue Data, Digital Data;	**2**
		• • Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	**4**
1.3	**P 2.5.7**	Microprocessors	**6**
		• • Functions performed and overall operation of a microprocessor;	**2**
		• • Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	**4**
1.4	**P 2.5.8**	Integrated Circuits	**6**
		• • Operation and use of encoders and decoders;	**2**
		• • Function of encoder types;	**2**
		• • Uses of medium, large and very large scale integration.	**2**
1.5	**P 2.5.9**	Multiplexing	**5**
		• • Operation, application and identification in logic diagrams of multiplexers and demultiplexers.	**5**
1.6	**P 2.5.10**	Fibre Optics	**15**
		• • Advantages and disadvantages of fibre optic data transmission over electrical wire propagation;	**2**
		• • Fibre optic data bus	**3**
		• • Fibre optic related terms;	**3**
		• • Terminations;	**3**
		• • Couplers, control terminals, remote terminals;	**2**
		• • Application of fibre optics in aircraft systems.	**2**

SYLLABUS FOR SEMESTER III(Practicals)
ELECTRONIC FUNDAMENTALS AND DIGITAL TECHNIQUES – II

1.7	**P 2.5.11**	Electronic Displays	**4**
		• • Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display	**4**
1.8	**P 2.5.12**	Electrostatic Sensitive Devices	**9**
		• • Special handling of components sensitive to electrostatic discharges;	**3**
		• • Awareness of risks and possible damage, personnel an ti-static protection devices.	**3**
		• • Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	**3**
1.9	**P 2.5.13**	Software Management Control	**3**
		• • Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	
1.1	**P 2.5.14**	Electromagnetic Environment	**5**
		• • Influence of the following phenomena on maintenance practices for electronic system	**2**
		• • EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection	**3**
1.11	**P 2.5.15**	Typical Electronic/Digital Aircraft Systems	**14**
		• • General arrangement of typical electronic/digital aircraft systems and associated BITE(Built In Test Equipment) testing such as:	**1**
		• • ACARS-ARINC Communication and Addressing and Reporting System	**2**

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		• • **ECAM-Electronic Centralised Aircraft Monitoring**	**1**
		• • **EFIS-Electronic Flight Instrument System**	**1**
		• • **EICAS-Engine Indication and Crew Alertimng System**	**1**
		• • **FBW-Fly by Wire**	**1**
		• • **FMS-Flight Management System**	**2**
		• • **GPS-Global Positioning System**	**2**
		• • **IRS-Inertial Reference System**	**1**
		• • **TCAS-Traffic Alert Collision Avoidance System**	**2**

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SYLLABUS FOR SEMESTER I II (Practical) 2.AIRCRAFT

ELECTRICAL SYSTEM - I

2		**AIRCRAFT ELECTRICAL SYSTEM - I**	**Hours :70**
2.1	**P 3 Av 2.5**	**Electrical Power (ATA 24)** • • Batteries Installation and Operation;	**6**
		• • DC power generation	**8**
		• • AC power generation;	**8**
		• • Emergency power generation;	**8**
		• • Voltage regulation;	**8**
		• • Power distribution;	**8**
		• • Inverters, transformers, rectifiers;	**8**
		• • Circuit protection;	**6**
		• • External/Ground power.	**10**

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SYLLABUS FOR SEMESTER III (Practical) 3.IRCRAFT

INSTRUMENT SYSTEM - I

3		**AIRCRAFT INSTRUMENT SYSTEM - I**	**Hours:60**
3.1	**P 3 Av 2.8**	Instrument Systems (ATA 31) • • Classification;	**4**
		• • Atmosphere;	**2**
		• • Terminology;	**2**
		• • Pressure measuring devices and systems;	**5**
		• • Pitot static systems;	**5**
		• • Altimeters;	**4**
		• • Vertical speed indicators;	**4**
		• • Airspeed indicators;	**4**

3.2	P 3 Av 2-9	• • Machmeters;	**5**
		• • Altitude reporting/alerting systems;	**2**
		• • Air data computers;	**3**
		• • Instrument pneumatic systems	**5**
		• • Direct reading pressure and temperature gauges;	**5**
		• • Temperature indicating systems;	**5**
		• • Fuel quantity indicating systems;	**5**

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SYLLABUS FOR SEMESTER III (Practical)

4.COMMUNICATION & NAVIGATION SYSTEM - I 4

		COMMUNICATION & NAVIGATION SYSTEM - I	**Hours: 60**
4.1	**P 3 Av**	**Communication/Navigation (ATA 23/34)**	**10**
	2.4	• • Fundamentals of radio wave propagation, antennas, transmission	
		• • lines, communication, receiver and transmitter	**50**
		Simple Radio Reciever and explanation	5
		Inter communication System in A/b Radio	5
		Antenna theory explanation & different types of antennas available in A/b Radio equipments Types of Transmission lines used in A/b radio communication system	10
		Simple B/D of Transmitter & Receiver, including B/D & function of trans receiver used in A/b Radio/Radar equipments	5
			15

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SYLLABUS FOR SEMESTER I II (Practical)

5. MAINTENANCE PRACTICES - I I

		MAINTENANCE PRACTICES - I I	**Hours:80**
	P 2.2.8	Riveting	**10**
		• • Riveted joints, rivet spacing and pitch;	3
		• • Tools used for riveting and dimpling;	3
		• • Inspection of riveted joints.	4
	P 2.2.9	Pipes and Hoses	**10**
		• • Bending and belling/flaring aircraft pipes;	3
		• • Inspection and testing of aircraft pipes and hoses;	3
		• • Installation and clamping of pipes.	4
	P 2.2.10	**10 Springs** **• • Inspection and testing of springs.**	**10**
	P2.2.11	**Bearings**	**15**
		• • Testing, cleaning and inspection of bearings;	**4**
		• • Lubrication requirements of bearings;	**4**
		• • Defects in bearings and their causes.	**4**
		• • 28.11.2003 L 315/100 Official Journal of the European Union EN	**3**
	P2.2.12	**Transmissions**	**15**
		• • Inspection of gears, backlash;	**5**
		• • Inspection of belts and pulleys, chains and sprockets	**5**
		• • Inspection of screw jacks, lever devices, push-pull rod systems.	**5**
	P2.2.13	**Control Cables**	**20**
		• • Swaging of end fittings;	**6**
		• • Inspection and testing of control cables;	**6**
		• • Bowden cables; aircraft flexible control systems.	**8**

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SEMESTER IV

Syllabus for AME - courses Avionics Stream

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SYLLABUS FOR SEMESTER IV (Theory)

Theory of Flight and Propulsion

Sl. No.	CAR Ref. No.	DESCRIPTION	Hrs50
1	P3Av2.1 (A)	**Theory of Flight** **<u>A. Aeroplane Aerodynamics and Flight Controls</u>** Operation and effect of: i. Roll control: ailerons	**20:00** 1:00
		ii. Operation and effects of spoilers	1:00
		iii. Pitch control operation and effect of elevators	2:00
		iv. Operation of Stabilators and its effects	2:00
		v. Variable incidence stabilizers and canards	2:00
		vi. Yaw control and its effects	2:00
		vii. Rudder limiters	1:00
	P3 Av2.1 (B)	• Control using elevon,	1:00
		• Control using Ruddervators	1:00
		• High lift devices slots, slats	2:00
		• Flaps, its types and operation	1:00
		• Drag inducing devices: spoilers • Lift dumpers, speed brakes	1:00 1:00
		• Operation and effect of trim tabs, servo tabs	1:00
		• Control surface bias.	1:00
	P3Av 2.1 (C)	B. High Speed Flight • Speed of sound and its effects on high speed flight	10:00 2:00
		• Subsonic flight and its effects on aircraft	2:00
		• Transonic flight and its effects on aircraft	2:00

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SYLLABUS FOR SEMESTER IV (THEORY)

Theory of Flight and Propulsion

		Supersonic flight and its effects on aircraft	
		• Mach number critical Mach number	2:00
		C. Rotary Wing Aerodynamics	**10:00**
		• Terminology: Terms and definitions are used for rotary wing a/c	3:00
		• Cyclic pitch control, its operation, effect on aircraft	2:00
		• Collective pitch control its operation, effect on aircraft	2:00
		• Anti torque controls using Tail rotor/Anti torque rotor & operation	3:00
2	P3Av 3.1	**Turbine Engines**	**10:00**
		• Description of Turbine engine	1:00
		• Constructional arrangement of Turbine Engine	2:00
		• Description and Operation of Turbojet engine	2:00
		• Description and Operation of Turbofan engine	1:00
		• Description and Operation of Turbo shaft engine	2:00
		• Description and operation of Turbo propeller engines	2:00

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SYLLABUS FOR SEMESTER IV(Theory)
Aircraft Electrical System - II

S.No	Ref. No.	TOPICS	Hrs
1	P3AV 2.5	**(i) Electrical power ATA 24**	**20:00**
		* Aircraft Battery charging procedure	10:00
		* Aircraft Battery capacity test procedure; Aircraft Battery final checks, leakage current from live point to container	5:00
		* Aircraft battery faults and remedies and final certification	5:00
2	P3AV 2.5	**(ii) AC / DC power generation**	**20:00**
		* DC alternator circuit light aircraft	2:00
		* Electrical power- voltage regulation overvoltage protection	2:00
		* Electrical power – differential voltage reverse current cutout	2:00
		* electrical power distribution – bus bar control devices, and transfer of power system	2:00
		* Inverters rotary and static type-Principle, operation, maintenance	2:00
		* Transformers various types – Inspection, maintenance and tests	2:00
		* Rectifiers – Transformer Rectifier Units voltage and current rating	2:00
		* AC Generator – Testing procedure	2:00
		* AC Generator - Power distribution	2:00
		* AC / DC Generator – Maintenance; faults and remedies and inspection procedures	2:00
3	P3AV2.5	**Voltage Regulation**	**10:00**
		* Carbon pile type voltage regulator	4:00
		* Transistorized and transistor type voltage regulator	3:00
		* Voltage regulator – Maintenance Testing – trouble shooting faults and remedies	3:00
4	P3AV 2.6	**Equipment & Furnishings ATA25**	**10:00**
		* Electronic emergency equipment requirements	3:00
		* Emergency Locator Transmitter construction, operation, location of installation	2:00
		* Testing and ELT and service for an ELT	3:00
		* Flight Data and Voice Recorder	2:00
5	P3AV 2.6	**Cabin Entertainment Equipment**	**10:00**
		* Radio Telephones; Cabin Interphone, Service Interphone; Passenger address – Audio Integrating system / Flight telephone	3:00
		* Audio channels (Music)	2:00
		* Video Channels (Films)	3:00

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SYLLABUS FOR SEMESTER IV(Theory)
Aircraft Instrument System-II

Sl. No.	Ref. No. / Units	TOPICS	Hrs90
1	P3AV2.8 (ATA 31)	**GYROSCOPIC PRINCIPLES**	**12:00**
		• Definition of axis and plane of spin	1:00
		• Degree of freedom spinning freedom	1:00
		• Tilting freedom and veering freedom input and output axis, displacement gyro and topple.	2:00
		• Definition of Newtown's first law of motion and how it	1:00
		• relates to gyroscopes.	1:00
		• Definition and factors affecting rigidity and precision.	1:00
		• Description and factors affecting apparent drift and real	1:00
		• drift.	2:00
		• Description of free, tide, earth and raie gyros.	1:00
		• Knowledge of precautions associated with the used and handling gyroscopic instruments.	1:00
2	P3AV 2.8	ARTIFICIAL HORIZON	13:00
		• Construction, operation and function of air	2:00
		• Electricity driven artificial horizons	1:00
		• Identification of information displayed on artificial horizon. Description of acceleration.	1:00
		• Turn and erection errors and the methods used to overcome.	1:00
		• Description of operation of the following erection system.	2:00

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SYLLABUS FOR SEMESTER IV(Theory)

Aircraft Instrument System-II

		· Pendulous vane	1:00
		· Ball type, torque motor and leveling switch.	2:00
		· Reason for fast erection operation and precautions	1:00
		· associated with the use of the system.	2:00
3	P3AV2.8	**SLIP INDICATOR**	**5:00**
		· Construction operation and functions of air and the electrical driven turn coordinators	2:00
		· Turn and slip indicator.	1:00
		· Interpretation of information displayed from typical indication.	2:00
4	P3AV2.8	**DIRECTIONAL GYROS**	**8:00**
		· Description of the function operation and construction of directional gyros.	2:00
		· Operation and used of the manual caging knobs.	2:00
		· Description of gimbals re balancing and gimbals errors	2:00
		· The effect on the operation of the instruments.	2:00
		COMPASS SYSTEM	**20:00**
		· Aircraft magnetism and its effect on compass	3:00
		· Magnetic compass	3:00
		· Compass construction and operation	2:00
		· Acceleration, Turning error deviation compensation	3:00
		· device. · Detector element Gyroscopic and indicator	3:00 2:00
		· Modes of operation	2:00
		· Compass swinging and preparation of deviation card.	2:00

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SYLLABUS FOR SEMESTER IV(Theory)

Aircraft Instrument System-II

		VIBRATIONS MEASUREMENT AND INDICATION : • Introduction, construction and operation of various types of vibration measuring instruments.	3:00 3:00
		OXYGEN SYSTEM:	5:00
		• Oxygen System Introduction	1:00
		• Purpose continuous flow oxygen system	1:00
		• Dilute demand system, Chemical oxygen system	1:00
		• Portable oxygen sets, Oxygen storage cylinders	1:00
		• Pipelines, oxygen Charging precaution	1:00
		Electronic Engine Control and Fuel Metering System (FADEC)	6:00
		• Introduction	2:00
		• Construction	2:00
		• Operation	2:00
		ENGINE INDICATING SYSTEMS:	12:00
		• Exhaust gas temperature /interstage turbine	
		• temperature indicating system	2:00
		• Engine speed indicating system	2:00
		• Engine thrust indication	2:00
		• Engine pressure ratio	2:00
		• Engine turbine discharge pressure or jet pipe pressure system	1:00
		• Oil pressure and temperature indicating systems	1:00
		• Fuel pressure, temperature and flow indicator manifold pressure indicating system	1:00
		• Engine torque and propeller speed indicating system	1:00
		STALL WARNING SYSTEM AND ANGLE OF ATTACK INDICATING SYSTEM	6:00

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SYLLABUS FOR SEMESTER IV(Theory)

Communication & Navigation System – II

Sl. No.	Ref. No. / Units	TOPICS	Hrs90
1	P2.2.4	**Aviation General Test Equipments**	**30:00:00**
		* Variable stabilized power supply	2:00
		* AF / RF Signal Generator	2:00
		* AF Oscillator	2:00
		* Spectrum Analyzer	2:00
		* CRO (Cathode Ray Oscilloscope)	2:00
		* Frequency Meters	2:00
		* Moving Coil, Volt, Ohm milli ammeter and multi meter	2:00
		* Digital Multi meter	2:00
		* RLC Probe	2:00
		* Logic Probe	2:00
		* Standing Wave Ratio meters	2:00
		* VTVM Vacuum Tube Voltage Meters	2:00
		* AC Bridges	2:00
		* WIEN Bridges	2:00
		* HAY Bridges	2:00
2	P3 AV 2.4	**Communication and Navigation (ATA 23/4)**	**20:00**
		* Fundamentals of Radio Wave Propagation	5:00
		* Antennas	5:00
		* Transmission lines	5:00
		* Communication Receiver and Transmitter	5:00
		Working Principles of the Following Systems **a. VHF – Very High Frequency**	**5:00**
		i. VHF – Introduction ii. Working Principles	1:00
		iii. Frequency allocation, aerials, Antenna orientation	1:00
		iv. Design features of Air Borne VHF Transmitter and Receiver	1:00
		v. Block diagrams explanation	1:00
		vi. Testing Procedures	1:00

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SYLLABUS FOR SEMESTER IV(Theory

Communication & Navigation System – II

Sl. No.	Ref. No. / Units	TOPICS	Hrs
	P3AV 2.4	**b. HFS – High Frequency System**	**5:00**
		i. Introduction and Working Principles ii. Design features of Air Borne HF Transmitter and Receiver	1:00
		iii. Block Diagram explanation of TXR and RXR	1:00
		iv. Antenna Tuning Units v. Frequency Selection and operation	1:00
		vi. Squelch Control purpose and Operation vii. SELCAL System	1:00
		viii. Block diagram explanation , purpose and operation of the system	1:00
		c. AIS – Audio Integration System	**3:00**
		i. Type of Services	2:00
		ii. Sub Parts Explanation	1:00
		d. ELT – Emergency Locator Transmitter	**3:00**
		i. Introduction and working principles	1:00
		ii. Explanation of Transmitter, Frequency bands	1:00
		iii. Battery Pack and Antennas	1:00
		e. CVR – Cockpit Voice Recorder	**3:00**
		i. Introduction	1:00
		ii. Block diagram Explanation	1:00
		iii. Utilization of the System	1:00
		f. FDR – Flight Data Recorder	**3:00**
		i. Introduction	1:00
		ii. Block Diagram Explanation	1:00
		iii. Utilization of the System	1:00
		g. ADF – Automatic Direction Finder	**5:00**
		i. Introduction	1:00
		ii. Principle of Loop and Sense Antennas	1:00
		iii. Directional Characteristics and Polar, Radiation Pattern diagrams	1:00
		iv. ADF Receiver and Block diagram and Theory of Operation	1:00
		v. Frequency Allocation and Testing Procedures	1:00

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SYLLABUS FOR SEMESTER IV(Theory)

Communication & Navigation System – II

Sl. No.	Ref. No. / Units	TOPICS	Hrs
	P3AV 2.4	**h. VOR – VHF Omni Range System**	**5:00**
		i. Principles of Ground Station and types of Signals Generated and Transmitted	1:00
		ii. VOR Receiver Block diagram explanation and phase comparison techniques	1:00
		iii. Uses and limitations of VOR	1:00
		iv. Explanation of Radials, To / From FLAG Circuitry	1:00
		v. Frequency allocation for TVOR, CVOR and DVOR vi. Explanation of VOR Airborne Antennas	1:00
		j. ILS – Instrument Landing System	**5:00**
		i. Principles of localizer ground station, transmitter, lateral guidance localizer receiver.	1:00
		ii. Block diagram and principles of glide path ground stations.	1:00
		iii. Pattern of signals transmitted, vertical guidance, coordination.	1:00
		iv. Block diagram explanation of glide path receiver, flag Circuitry, course softening and deflection system	1:00
		v. Indication for both localizer and glide path vi. Marker System – Principles of ground station, types of different signals emitted and their modulation, Outer Middle and Inner Markers Identification **k. MLS - Micro Wave Landing System**	1:00
		i. Principle of operation, explanation of transmitters radiation and pattern	1:00
		ii. TRSB – Time Reference Scan Beam	1:00
		iii. Advantages of MLS over ILS	1:00

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SYLLABUS FOR SEMESTER IV(Theory)

Maintenance Practices - III

Sl. No.	Ref. No. / Units	TOPICS	Hrs50
1	P2.2.14.1	**Material Handling**	**5:00**
		* Marking and calculation of bend allowance	1:00
		* Process of bending sheet metal	1:00
		* Process of forming sheet metal	1:00
		* Inspection sheet metal work	1:00
		* Checking of sheet metal work	1:00
2	P2.2.14.2	**Composite and Non- metallic**	**4:00**
		* Practices of bonding	1:00
		* Processing of bonding	1:00
		* Environmental conditions	1:00
		* Inspection methods	1:00
3	P2.2.16	**Aircraft Weight and Balance**	**6:00**
		* Theory of weight and balance, centre of gravity	1:00
		* Balance limit calculation, use of relevant documents	1:00
		* Weight and balance data, different terminology	1:00
		* Preparation of aircraft for weighing	1:00
		* Balance computation , EWCG	1:00
		* Weight and balance extreme condition loading graph & CG envelopes	1:00
4	P2.2.17	**Aircraft handling and storage**	**10:00**
		* Aircraft taxing and towing procedure	1:00
		* General safety precautions	1:00
		* Description of general jacking procedures	1:00
		* Use and methods of operation of jacking equipment	1:00
		* Description of general chocking, securing and associated safety precautions	1:00
		* Aircraft storage methods	1:00
		* Aircraft refueling / defueling procedures	1:00
		* De-icing / anti – icing procedure	1:00
		* Electrical, hydraulic and pneumatic ground supplies	1:00
		* Effects of environmental conditions on aircraft handling	1:00

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SYLLABUS FOR SEMESTER IV(Theory)

Maintenance Practices - III

Sl. No.	Ref. No.	TOPICS	Hrs
5	P2.2.18	**Disassembly, Inspection, Repair and Assembly Techniques**	**11:00**
		(a) * Types of defects and vidual inspection techniques	1:00
		* Corrosion removal, assessment and reprotection	1:00
		(b) * General repair methods, structural repair manual	1:00
		* Ageing, fatigue and corrosion control programmes	1:00
		(c) * Non destructive inspection techniques including penetration	1:00
		* Magnetic particle inspection	1:00
		* Magnetizing equipments	1:00
		* Dye- penetrant inspection, Radiography	1:00
		* Eddy current, ultra sonic and baroscope method	1:00
		(d) * Disassembly and re-assembly technique (e) * Trouble shooting techniques 1:00	1:00
6	P2.2.19	**Abnormal events**	**3:00**
		(a) * Inspections following lighting strike and HIRF penetration	1:00
		(b) * Inspection following abnormal events such as heavy landings	1:00
		* Fight through severe turbulence, tyre bust incidents and damage from set blast	1:00
7	P2.2.20	**Maintenance Procedure**	**11:00**
		* Maintenance planning	1:00
		* Modification procedures	1:00
		* Stores procedures	1:00
		* Certification / release procedures	1:00
		* Interface with aircraft operation	1:00
		* Maintenance inspection	1:00
		* Inspection techniques; Hard Time, On Condition and Condition Monitoring	1:00
		* Inspection fundamentals	1:00
		* Quality control / Quality assurance	1:00
		* Additional maintenances procedure	1:00
		* Control of life limited components	1:00

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SYLLABUS FOR SEMESTER IV (Practicals)

THEORY OF FLIGHT AND PROPULSION

S. No.	Ref. No./ Units	Practicals / Demonstration	Total Hrs 50
1	4.7.2.1	Demonstration of primary controls such as ailerons , elevators Rudder and its operation	3:00
2	4.7.2.1	Demonstration of operation of stabilators and its variable incidence angle	2:00
3	4.7.2.1	Demonstration of operation of flaps	2:00
4	4.7.2.1	Demonstration operation of trim tabs, servo tabs	3:00
5	4.7.2.1	Control surfaces removal and their fitment	5:00
6	4.7.2.1	Demonstration of cyclic pitch control and its operation	3:00
7	4.7.2.1	Demonstration of collective pitch control and its operation	3:00
8	4.7.2.1	Demonstration of anti torque control using tail rotor	3:00
9	4.7.2.1	Demonstration and operation of spoilers	3:00
10	4.8.1.3	Demonstration of Turbine engine constructional arrangement and its operation	4:00
11	4.8.1.3	Demonstration of and operation of turbojet engine	4:00
12	4.8.1.3	Demonstration and operation of turbo shaft engine	4:00
13	4.8.1.3	Demonstration and operation of turbo propeller engine	4:00
14	4.7.2.1	Demonstration and operation of Yaw control	3:00
15	4.7.2.1	Demonstration and operation of speed breaks	2:00
16	4.7.2.1	Demonstration and operation of slots and slats	2:00

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SYLLABUS FOR SEMESTER IV(Practlcal)

AIRCRAFT ELECTRICAL SYSTEM – II

S.No.	Ref.No. / Units	Practical / Demonstration	Total Hrs 70
1	P3AV 2.5	(i) Electrical Power	**20:00**
		* Familiarization of aircraft storage battery	2:00
		* Identification of parts of Lead Acid Battery	2:00
		* Demonstration of charging methods (constant / Current and voltage)	4:00
		* Demonstration use of hydro meter	2:00
		* Demonstration of capacity test	2:00
		* Dismantle procedure cell removal / nstallation of Nickel Cadmium battery	4:00
		* Demonstration of different parts of Nickel Cadmium cell	2:00
		* Demonstration of insulation test – current leakage test capacity test	2:00
2	P3Av2.5	(ii)DC Power Generation	**20:00**
		* Familiarization of DC and AC Generator. Identification of different parts.	2:00
		* Generator - Armature Insulation test; Growler test, Concentricity check of Armature shaft with the aid of D.T.I	4:00
		* Generator field coils insulation test	2:00
		* Demonstration of Assembly – Testing	4:00
		* DC Generator Brush Bedding –	4:00
		* Brush Holder spring landing test	2:00
		* DC Generator output test with no load to full load on Generator Test Bench	2:00
3	P3AV 2.5	(iii) AC Power Generation	**5:00**
		* AC Generator – familiarization identification of different parts	1:00
		* Dismantle, Inspection, Insulation test	2:00
		* Assembly – Test on AC Generator Test Bench; Current leakage test	2:00

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SYLLABUS FOR SEMESTER IV(Practical)

AIRCRAFT ELECTRICAL SYSTEM – II

S.No.	Ref.No.	Practical / Demonstration	Hours
4	P3AV 2.5	(iv)Voltage Regulation	**5:00**
		* Familiarization voltage regulator dismantle, Identify different part, Inspection	1:00
		* Demonstrate Disassembly Assembly –	1:00
		* Bench Test Along with Generator – Check Performance	2:00
		* Demonstrate Adjustment procedure	1:00
5	P3AV 2.5	(v) Inverters / Transformers/ Rectifiers	**10:00**
		* Familiarize / Identify Inverter static – Rotary Inverter	2:00
		* Demonstrate – operation	2:00
		* Identify Different Transformer	2:00
		* Demonstrate short circuit open circuit test	2:00
		* Demonstrate Rectifier function	2:00
6	**P3AV 2.6**	Cabin Entertainment Equipment	**10:00**
		* Radio Telephones; Cabin Interphone, Service Interphone; Passenger address – Audio Integrating system / Flight telephone * Audio channels (Music)	2:00
		* Video Channels (Films)	3:00
		* Net work connections for personal laptop and SMS facility for E-mailing	2:00

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SYLLABUS FOR SEMESTER IV(Practlcal)

AIRCRAFT INSTRUMENT SYSTEMS – II

Sl. No.	Ref. No.	Practical / Demonstration	Total Hrs 90
1	4.11.3	**Gyroscopic Instruments**	**5:00**
		Air-driven gyroscopic instruments 1. Partial dismantling	2:00
		2. Examination	2:00
		3. Reassembly	1:00
2	4.11.3	Electrically-drive gyroscopic instruments	**5:00**
		1. Partial dismantling	2:00
		2. Examination	2:00
		3. Reassembly	1:00
3	4.11.3	Artificial Horizon	**5:00**
		1. Partial dismantling	2:00
		2. Inspection	2:00
		3. Reassembly	1:00
4	4.11.3	Directional gyro	**6:00**
		1. Partial dismantling	2:00
		2. Inspection	2:00
		3. Reassembly	2:00
5	4.11.3	Turn and bank indicator	**5:00**
		1. Dismantling	2:00
		2. Inspection	2:00
		3. Reassembly	1:00
6	4.11.3	Calibration checks on gyroscope test turntable	**6:00**
7	4.11.7	**Compass systems** Magnetic compasses	**6:00**
		1. Friction and damping tests	1:00
		2. Practice compass swing	4:00
		3. Compensation	1:00
8	4.11.7	Remote compass	**6:00**
		1. Examination	2:00
		2. Demonstration.	4:00
9	4.11.7	Tests of compass swinging site.	**6:00**
10	4.11.7	Swing of compass in available aircraft: compensation practice.	**6:00**

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SYLLABUS FOR SEMESTER IV(Practlcal)

AIRCRAFT INSTRUMENT SYSTEMS – II

11	4.11.7	Remote compass	**10:00**
		1. Partial dismantling	3:00
		2. Inspection	2:00
		3. Reassembly	3:00
		4. Test.	2:00
12	4.11.6	**Fuel contents indication** Float-operated desynn contents gauges	**8:00**
		1. Examination	2:00
		2. Demonstration of operation	1:00
		3. Dismantling	1:00
		4. Inspection	2:00
		5. Reassembly	1:00
		6. Test	1:00
13	4.11.6	Capacitance type contents gauges	**6:00**
		1. Examination	2:00
		2. Demonstration of operation	2:00
		3. Reassembly	1:00
		4. Test	1:00
14	4.11.6	Flowmeter	**5:00**
		1. Dismantling	2:00
		2. Inspection	1:00
		3. Reassembly	1:00
		4. Test	1:00
15	4.11.8	**Miscellaneous instruments** Examination and demonstration of other types of instruments 1. Flowmeters	**5:00** 2:00
		2. Navigation	2:00
		3. Landing aid presentations	1:00

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SYLLABUS FOR SEMESTER IV(Practical)

COMMUNICATION AND NAVIGATION SYSTEMS – II

Sl. No.	Ref. No./ Units	Practical / Demonstration	Total Hrs 70
-1	-2	-4	-6
1	4.13.4	Familiarization of all the test equipment, meters and Mockups in Avionics Lab	5:00
2	4.13.4	Pulse generator multi vibrator	2:00
3	4.13.4	AF/ RF Single Generator, AF oscillator – Operation	6:00
4	4.13.4	Radar Transmitter and receiver Characteristics verification of PPI presentation	5:00
5	4.13.4	Radio test equipment – VTVM System Operation, Testing the parameters	5:00
6	4.13.4	CRT oscilloscope Principle construction, time base, horizontal deflection, vertical deflection, measurement of voltage, frequency, phase difference of wave forms	7:00
7	4.13.4	Radio navigation – ADF principle, ground station, directional characteristics and theory of operation	4:00
8	4.13.4	VOR principle, ground station, phase comparison, Radials To/FM indicator and Flag circuits	4:00
9	4.13.4	Instrument Landing System (ILS) - Localizer - Ground station - Glide slope receiver - Marker receiver, outer, middle and inner marker transmitter	8:00
10.	4.13.4	Aircraft Radio Station communication installation on modern transport aircraft VHF, HF with Selcal System Incorporated	6:00
11.	4.13.4	Warning System – ELT	6:00
12.	4.13.4	Audio Integration System (AIS)	4:00
13.	4.13.4	Interphone	4:00
14.	4.13.4	Recording System	4:00

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SYLLABUS FOR SEMESTER IV(Practical)

MAINTENANCE PRACTICES – III

Sl. No.	Ref. No. / Units	TOPICS	Total Hrs 70
1	P2.2.14.1	**Material Handling**	**8:00**
		* Process of bending sheet metal	3:00
		* Process of forming sheet metal	3:00
		* Inspection sheet metal work	2:00
2	P2.2.14.2	**Composite and Non- metallic**	**2:00**
		* Inspection methods	2:00
3	P2.2.16	**Aircraft Weight and Balance**	**3:00**
		* Balance computation , EWCG	3:00
4	P2.2.17	**Aircraft handling and storage**	**####**
		* Aircraft taxing and towing procedure	4:00
		* Description of general jacking procedures	6:00
		* Use and methods of operation of jacking equipment	6:00
		* Description of general chocking, securing and associated safety precautions	2:00
		* Aircraft refueling / defueling procedures	6:00
		* Electrical, hydraulic and pneumatic ground supplies	6:00
5	P2.2.18	**Disassembly, Inspection, Repair and Assembly Techniques**	**9:00**
		(a) * Types of defects and vidual inspection techniques * Corrosion removal, assessment and reprotection	3:00
		(b) Disassembly and re-assembly technique	3:00
		(c) Trouble shooting techniques	3:00
6	P2.2.19	**Abnormal events**	**9:00**
		(a) * Inspections following lighting strike and HIRF penetration	3:00
		(b) * Inspection following abnormal events such as heavy landings	3:00
		* Fight through severe turbulence, tyre bust incidents and damage from set blast	3:00
7	P2.2.20	**Maintenance Procedure**	**9:00**
		* Maintenance inspection	3:00
		* Inspection techniques; Hard Time, On Condition nd Condition Monitoring	3:00
		* Inspection fundamentals	3:00

SEMESTER- V

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SYLLABUS FOR SEMESTER V (Theory)

Aircraft Structures and Flight Controls

Sl. No.	Ref. No.	TOPICS	Hrs50
1	P3Av2.2	**Structures — General Concepts**	**15:00**
		(a) Fundamentals of structural systems and its description	3:00
		• (b) Zonal identification systems are used on aircraft	2:00
		• Station identification systems are used on aircraft	2:00
		• Electrical bonding and its necessity	2:00
		• Lightning strike and its description	2:00
		• Protection is given on aircraft	2:00
		• Provision are followed for lightning strike	2:00
2	P3Av 2.7	**Flight Controls (ATA 27)**	**35:00:00**
		(a) • Primary controls: aileron, elevator, rudder	3:00
		• Spoiler and Trim control	3:00
		• Active load control	2:00
		• High lift devices, slots, slats, flaps	3:00
		• Lift dump, speed brakes	3:00
		• System operation: manual	3:00
		• System operation hydraulic	3:00
		• System operation pneumatic	3:00
		• Artificial feel, Yaw damper	2:00
		• Mach trim, rudder limiter, gust locks.	3:00
		• Stall protection systems.	3:00
		(b) System operation; electrical fly by wire	4:00

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SYLLABUS FOR SEMESTER V (Theory)

AIRCRAFT ELECTRICAL SYSTEM – III

Sl. No.	Ref. No. /	TOPICS	Hrs 70
1	P3AV2.9	**(i) LIGHTS – ATA 33** * External lights – Navigation, Anti-collision, landing, taxiing	**8:00**
		Runway turn off; ice inspection light, logo light and strobe (flash) Light	3:00
		* Internal lights ; cabin, cockpit cargo	3:00
		* Emergency light	2:00
2	P3AV2.9	**(ii) AIR CONDITIONING – ATA 21**	**8:00**
		Cooling System	
		* Vapour cycle cooling machine	1:00
		* Electronic temperature control regulator	1:00
		* Air cycle cooling machine	1:00
		Heating Systems	
		* Exhaust heating systems	1:00
		* Electric Heating System	1:00
		* Combustion Heater systems	1:00
		* Heating with Engine Bleed Air	1:00
		* Electronic cabin temperature control system	1:00
3	P3AV2.9	**(iii) FIRE PROTECTION – ATA 26**	**8:00**
		* Types of Fire or Overheat Detectors	1:00
		* Installation and Routing of Sensing Units	1:00
		* Smoke and Toxic – Gas – Detection System	1:00
		* Fire Extinguishing Agents	1:00
		* Electrical circuit diagrams and testing procedures	2:00
		* Trouble shooting theory and practice	2:00
4	P3AV 2.9	**(iv) Flight Control – ATA 27**	**4:00**
		* Introduction to Flight Control Surfaces * Control Surface Indicating Systems	1:00
		* Take off Warning Indicator Systems	1:00
		* Stall Warning Indicator Systems * Flight – Control – Position Indicating Systems	1:00
		* Trouble Shooting Theory and Practice	1:00

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SYLLABUS FOR SEMESTER V (Theory)

AIRCRAFT ELECTRICAL SYSTEM – III

5	P3Av2.9	**(v) Hydraulic Power - ATA – 29**	**4:00**
		* Introduction to Hydraulic Power	1:00
		* Hydraulic Power Pressure Control Devices	1:00
		* Hydraulic Pressure Switches / Hydraulic Pumps Electrically Operated)	2:00
6	P3Av2.9	**(vi) Ice and Rain protection ATA – 30**	**10:00**
		* Icing effects	1:00
		* Ice detection- Method and indications	1:00
		* Ice prevention : Pneumatic deicing system	1:00
		* Electrical and Electronic Timer	1:00
		* Thermal anti icing systems	1:00
		* Ground Deicing of aircraft	1:00
		* Wind shield icing control systems	1:00
		* Pilot and A.O.A sensors electrical anti icing	1:00
		* Window Defrost system / wind shield and carburetor alcohol Deicing systems/water and toilet Drain heaters	1:00
		* Rain Eliminating systems/wind shield rain repellant/ Pneumatic Rain removal systems	1:00
7	P3Av2.9	**Indicating / Recording system(Central Warning System)**	**10:00**
		* Electrical Indicating Instruments for Power plants Ammeters, Voltmeter Shunts, Instrument, Transformer Frequency meter and Power meter	3:00
		* Electrical Indicating Instruments for aircraft system and ontrol	2:00
		* Electronics flight systems: Central Warning System EICAS, ECAM, EFIS, PDS, (Electronic Display System) BITE, Announciator panel, CRT Display	3:00
		* Warming and Indicating lights, Magnetic Indicators	2:00

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SYLLABUS FOR SEMESTER V (Theory)

AIRCRAFT ELECTRICAL SYSTEM – III

8	P3Av2.9	**Landing Gear/Positioning and Warning system – II ATA -32**	**2:00**
		* Extension & Retraction level switch	1:00
		* Position indication/ warming / ground safety switch	1:00
9	P3Av2.9	**Electrical and Electronic panel ATA – 39**	**3:00**
		* Electrical and Electronic Equipment Racks * Electrical and Electronic Junction Boxes	1:00
		* Multipurpose Electronic components	1:00
		* Printed Circuit Card Assemblies	1:00
10	P3Av2.9	**Doors ATA -52**	**3:00**
		* Door warning / Entrance stair / Landing Gear	2:00
		* Passenger / Crew Door proximity switch – warning and indication	1:00
11	P3Av2.9	**Ignition ATA – 74**	**5:00**
		* Magneto Ignition and High Energy Ignition	2:00
		* Spark plugs and Igniter plugs	1:00
		* Different types of Magneto and Auxiliary Ignition units.	1:00
		* Electrical Power supply, Distribution Ignition cable harness	1:00
12	P3Av2.9	**Engine Starting System ATA – 80**	**5:00**
		* Piston Engine (Reciprocating)	2:00
		* Gas Turbine Engine	2:00
		* Different types of starting system	1:00

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SYLLABUS FOR SEMESTER V (Theory)

AIRCRAFT INSTRUMENT SYSTEM – III

Sl. No.	Ref. No. / Units	TOPICS	Hrs100
1	P3AV2.8 (ATA31)	**FLIGHT DATA RECORDING SYSTEM :**	**11:00**
		• Aircraft integrated data system (AIDS)	2:00
		• Methods of recording.	1:00
		• Track Recording	1:00
		• Electro-magnetic recording recorders.	3:00
		• Accelerometer and fatigue meters - basic accelerometer principle, construction and operation.	2:00
		• Fatigue meter principle necessity construction and operation	2:00
2	P3AV2.8 (ATA 31)	**ELECTRONIC FLIGHT INSTRUMENT SYSTEM (EFIS) :**	**7:00**
		• Introduction	1:00
		• Display units, Symbol generators control panel	2:00
		• Remote light sensor	1:00
		• Display presentations, failure annunciation.	2:00
		• Data source selection and display of air data.	1:00
3	P3AV2.8 (ATA31)	**INSTRUMENT WARNING SYSTEM, MASTER WARNING SYSTEM AND CENTRALIZED WARNING PANEL.**	**10:00**
		• Warning and indicating lights- warning lights, caution lights, indicating or advisory lights	5:00
		• Magnetic indicators	2:00
		• Central warning system centralized warning system annunicator panel	3:00
4	P3AV2.7 (b)	**SYSTEM OPERATION, ELECTRICAL FLY BY WIRE**	**10:00**

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SYLLABUS FOR SEMESTER V (Theory)
AIRCRAFT INSTRUMENT SYSTEM – III

5	P3AV2.10 (ATA 45)	**<u>On board maintenance systems</u>**	**10:00**
		• Central maintenance computers • Data loading system	2:00
		• Electronic library system	2:00
		• Printing	2:00
		Structure monitoring (damage tolerance monitoring)	2:00
6	P3AV 2.3 (ATA	**<u>AUTO FLIGHT</u>**	**22:00**
		• Fundamentals of automatic flight control including working principles and current terminology	2:00
		• Command signal processing	4:00
		• Modes of operation, Roll , Pitch and Yaw channels	2:00
		• Yaw dampers	2:00
		• Stability augmentation system in helicopters	2:00
		• Automatic trim control	2:00
7	P3AV 2.4	**FLIGHT DIRECTOR SYSTEM:**	**15:00**
		• Integrated Instrument and flight director system.	2:00
		• Basic presentation of flight director system	3:00
		• Indicators ADI & HIS primary altitude sensing and presentations. Command signal passage and presentation on command bars.	3:00 2:00
	P3AV2.8	• Different modes of operations.	5:00
8		**<u>GROUND PROXIMITY WARNING SYSTEM:</u>**	**8:00**
		• Introduction	1:00
		• Operating modes,	4:00
		• Advanced GPWS, terrain avoidance warning systems (TAWS).	3:00
9	P3AV2.4	**<u>FLIGHT MANAGEMENT SYSTEM.</u>**	**7:00**
		• Introduction	1:00
		• Performance data computer system (PDCS)- computer	2:00

		• Mode annunciator, display flight management system, (FMS)-flight management computer, control and display unit, data pages and flight plan construction, performance and in-flight display, system configuration.	4:00

SYLLABUS FOR SEMESTER V (Theory)

Communication & Navigation System – III (ATA 23 / 34)

Sl. No.	Ref. No./ Units	TOPICS	Hrs100
1	P3 AV 2.4	**Communication / Navigation (ATA 24 / 34)**	**10:00**
		DME – Distance Measuring Equipment	
		* Introduction	1:00
		* Principle of operation	1:00
		* Pulse navigation system	1:00
		* Description of interrogator	1:00
		* Description of Reply generator	1:00
		* Reply presentation	1:00
		* Allotted frequencies	1:00
		* Block diagram explanation	1:00
		* Details of Antenna system	1:00
		*Test procedures	1:00
2	P3 AV 2.4	**Doppler Navigation**	**7:00**
		* Intrduction	1:00
		* Principles of operation	1:00
		* Explanation of Doppler effects	1:00
		* Moving targets	1:00
		* Doppler shift and ground speed	1:00
		* Explanation of Antennas	1:00
		* Explanation of Drift meter and ground speed meter	1:00
3	P3 AV 2.4	**Area Navigation**	**8:00**
		* Introduction	1:00
		* Principles of operation	1:00
		* Development of Air space organization	1:00
		* VOR / DME based RNAV	1:00
		* Integrated navigation principles	1:00
		* Testing methods	1:00
		* Utilization of the system	1:00
		* Explanation of display system	1:00
4	P3 AV	**Flight Management System (FMS)**	**12:00**

	2.4	* Introduction, explanation of sub systems- such as and FMC – Flight Management Computer and FCC – Flight Control Computer	4:00

SYLLABUS FOR SEMESTER V (Theory)

Communication & Navigation System – III (ATA 23 / 34)

		* TMC – Thrust Management Control	2:00
		* ADC – Air Data Computer	2:00
		* EICAS – Engine Indicating and Crew Alerting System	2:00
		• Explanation of Combined block iagram of all the above	2:00
5	P3 AV 2.4	**Global Positioning System – (GPS)**	**3:00**
		* Introduction and principle of operation	1:00
		* Categorization of Segments and explanation of each Segment	1:00
		* Theory of Operation and System Utilization	1:00
6	P3 AV 2.4	**Global Navigation System**	**10:00**
		* Hyperbolic System	2:00
		* CW, RHO- RHO- System	1:00
		* Omega Navigation System	1:00
		* Stations - different locations in the world	2:00
		* Broad Costing patterns	1:00
		* Timing signals and frequency of operation	2:00
		* Monitoring systems	1:00
7	P3 AV 2.4	**SATELLITE SYSTEMS (GNSS)**	**7:00**
		Global Navigation Star Satellite System – Introduction	2:00
		Inertial Navigation System (INS)	1:00
		* Introduction	
		* Block diagram explanation	1:00
		* Newton's laws	1:00
		* Accelerometers	1:00
		* Gimbal platform	1:00
8	P3 AV 2.4	**ATC Transponder (SSR)**	**10:00**
		* Introduction	1:00
		* Block Diagram explanation	2:00
		* Details of mode A, C , and S	1:00
		* Pulse coding	1:00
		* Code selection switches	2:00
		* Pattern of interrogation and reply pulses	2:00
		* Test procedures	1:00

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SYLLABUS FOR SEMESTER V (Theory)

Communication & Navigation System – III (ATA 23 / 34)

9	P3AV 2.4	**Traffic Alert And Collision Avoidance System(TCAS)**	**3:00**
		* Introduction and explanation of sub systems	1:00
		* Explanation of Traffic Advisory	1:00
		* Resolution Advisory	1:00
10	P3AV 2.4	**Weather Avoidance Radar**	**15:00**
		* Principle of operation	1:00
		* Nature of Radar Signals	1:00
		* Details of Modulator	1:00
		* Transmitter and Receiver	1:00
		* Types of display systems – PPI Indicators	5:00
		* Antennas	1:00
		* Control Pannel	1:00
		* Wave guides	1:00
		* Radomes	1:00
		* Safety precautions should to be observed	2:00
11	P3 AV 2.4	**Radio Altimeter**	**10:00**
		* Principles of operation	1:00
		* Explanation of Transmitter / Receiver system	2:00
		* Antennas	2:00
		* Control panel	1:00
		* Transmission lines and altitude indicator	2:00
		* Frequency modulation, frequency deviation and range calculation	2:00
12	P3 AV 2.4	**ACARS - ARINC Communication and Reporting System**	**5:00**
		* Introduction	1:00
		* Working Principle	1:00
		* Network	1:00
		* Sub parts	1:00
		* Testing Procedures	1:00

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SYLLABUS FOR SEMESTER V (Theory)

Avionics System Maintenance

SL NO.	Ref. No:/UNITS	Topics	Hrs ####
I	---	**Aircraft Instrumentation**	**10:00**
1		- Auto / flight control system	2:00
2		- EICAS – Engine Indication and Crew Alert system	2:00
3		- IRS – Inertial Reference System	2:00
4		- FDI – Flight Director System	2:00
5		- RRC – Remote Reading Compass	2:00
II	---	**Aircraft Electrical System**	**10:00**
1		- EDS – Electronic Display System (Central warning system and Master warning and caution lights and annunciator panel)	2:00
2		- CWS –(Central Warning System), CDU – (Control display unit), CRT Display	2:00
3		- ECAM – Electronic Centralized Aircraft Monitor (Generator power control, generation , regulation and distribution)	2:00
4		- EFIS – Electronic Flight Instrument System	2:00
5		-FMS – Flight Management System, MCDU – (Multipurpose control display unit) BITE – (Built – in Test Equipment) BPCU – (Bus power control unit) CMCS – (Central maintenance computer system)	2:00
III		**Aircraft Radio System**	**10:00**
1		**- FMS – Flight Management System**	
2		- FMC – Flight Maintenance Computer	2:00
3		- FCC – Flight Control Computer	1:00
4		- TMC – Thrust Management Control	1:00
5		- ADC – Air Data Computers	1:00
6		- MFD – Multi Functional Display	2:00
7		- MPU – Multi Functional Processor Unit	2:00
8		- CDU – Control Display Unit	1:00

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SYLLABUS FOR SEMESTER V (Practical)

AIRCRAFT STRUCTURES AND FLIGHT CONTROLS

Sl. No.	Ref. No.	TOPICS	Total Hrs 50
1.	4.7.1.8	**Structures — General Concepts**	**15:00**
		• Identification of types of structures	3:00
		• Identification of aircraft zones	3:00
		• Identification of aircraft stations	3:00
		• Identification of electrical bonding	3:00
		• Identification of protection given for lightning strike	3:00
2.	4.7.2.1	**Flight Controls (ATA 27)**	**35:00**
		• Identification of primary controls	3:00
		• Demonstration of response of primary controls for control stick movement	3:00
		• Demonstration of operation of spoiler and trim control	3:00
		• Demonstration of high lift devices - slots, slats, flaps	3:00
		• Functional check of above operations	3:00
		• Demonstration and functional check of spoilers and speed breaks	5:00
		• Demonstration and functional check of artificial feel, yaw damper	3:00
		• Demonstration of mach trim, rudder limiter, gust locks.	3:00
		• Demonstration of Stall protection systems.	3:00
		• System operation - Fly by wire	3:00 3:00

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SYLLABUS FOR SEMESTER V (Practical)

AIRCRAFT ELECTRICAL SYSTEM – I

S.No.	Ref. No. /Units	Topics/ Practical / Demonstration	Hours
1.	P3AV 2.9	**Light – ATA 33**	
		Familiarize location of external lights and demonstrate their function with elect power supply	**5:00**
		Familiarize internal light demonstrate their function emergency lights demonstrate their operation maintenance inspection procedure	**5:00**
2.	P3Av2.9	**Air-condition - System ATA 21**	**5:00**
		Identify and familiarize different parts components of the system / maintenance inspection procedure	
		Familiarization the location of vapour cycle machine check its operation with suitable external supply connected	
		Check for temperature sensors associated with vapour cycle machine for their location	
		Air cycle machine identify and familiarization various components associated with system Check for flow temperature and humidity control sensors	
		Check for air supply components like engine bleed valve for their location on the engine Check A.P.U for different components associated with pneumatic system	
		Check for all electrical connectors of different components associated with air condition system	
		Check for indication in the cockpit related to air condition system (overheat panel; centre console front panel)	
3.	P3AV 2.9	**Fire Protection – ATA 26**	**5:00**
		Identify and familiarize different components of the system installation and maintenance procedure (Inspection procedure)	
		Identify and familiarize component and demonstrate their operation / maintenance procedure installation and inspection rocedure	
4.	P3AV 2.9	**Hydraulic power ATA – 29** Identify and familiarize components and their maintenance procedure, inspection procedure pertaining to electrical	**5:00**

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SYLLABUS FOR SEMESTER V (Practical)

AIRCRAFT ELECTRICAL SYSTEM – I

5.	P3AV 2.9	**Electrical and Electronic panel ATA – 39** Electrical and Electronic Equipment racks Electrical and Electronic Junction Boxes Electrical Components Printed Circuit Card Assemblies	**5:00**
6.	P3AV 2.9	**Door ATA 52** Door warning / Entrance stair / landing gear Passenger / crew door proximity switch warning and indication	**5:00**
7.	P3AV 2.9	**Ignition ATA 74** Magneto ignition and High Energy ignition	**5:00**
		Spark plugs and igniter plugs	
		Different types of magneto and auxiliary ignition units	
		Electrical power; Distribution ignition cable harness	
		Magneto – Inspection	
		Assembly – Bench Test Procedure	
		Spark/ igniter plug- visual familiarization	
		Cleaning of carbon deposit	
		Check-gap – centre electrode and earth point	
		Check for ear, testing of spark plug / igniter plug by suitable magneto test bench check for current consumption of unit under test	
		High energy ignition unit-	
		Bench test prior to dismantle for overhaul	
		Allow 2 minutes lapse before handling after test	
		Dismantle to the extent required check for sealed gap in glass for any damage	
		Check capacitor, check for transistor, diodes	
		Check for transformer	
		Check input/ output connection	
		Assembly to the extent dismantle	
		Bench test and check for current consumption by the unit observe safety precautions	

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SYLLABUS FOR SEMESTER V (Practical)

AIRCRAFT ELECTRICAL SYSTEM – I

8.	P3AV 2.9	**Ice & Rain protection ATA – 30**	**5:00**
		Visual familiarization of different types of ICE detectors	
		Deicing boots – check for any damage check for inflation / deflation of rubber boots by using pneumatic ground cart supply	
		Check for serviceability of heater element for physical condition	
		Check continuity of heater element on pitot heat / drain system.	
		Wind screen wiper – visual familiarization check for its operation	
		Pneumatic – do not operate wiper on dry surfaces.	
		Check temperature control sensor carry out electrical test to ensure serviceability of sensor (Ref: Approved / Manufacturer's guide lines)	
		Check for security of installation of rain repellent system	
9.	P3AV 2.9	**Engine Staring System ATA 80**	**5:00**
		Piston engine (reciprocating)	
		Gas turbine Engine	
		Different types of starting system	
		Inspection of the electrical components related to engine starting system. Check for operation and inspect as per approved guide lines	

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SYLLABUS FOR SEMESTER V (Practical)

AIRCRAFT INSTRUMENT SYSTEMS – III

S.No.	Ref.	Topic	Hrs100
1	4.12.1	**Autopilots**	**8:00**
		1. Examination and demonstration of autopilot mock-up	4:00
		2. Examination and demonstration of components	4:00
2.	4.12.2	**Flight control systems**	**20:00**
		Autopilots (electrical or electronic):	
		1. Dismantling	4:00
		2. Examination of components	3:00
		3. Reassembly	5:00
			9:00
		4. Installation in aircraft or on simulator by following manufacturer's test programme; practice with portable test kit.	
3.	4.12.2	Autopilots (pneumatic or hydraulic actuation)	**20:00**
		1. Dismantling of components parts	4:00
		2. Reassembly	4:00
		3. Installation in aircraft or simulator	6:00
		4. Function tests	6:00
4.	4.12.2	Examination and testing of elements of flight director ystems, automatic flare and automatic landing systems, as required	**20:00**
5.	4.11.4	**Engine Speed Indication (ESI)**	**6:00**
		ESI generators (DC and AC types)	
		1. Partial dismantling	2:00
		2. Inspection	2:00
		3. Reassembly	2:00
6.	4.11.4	ESI Gauges	**8:00**
		1. Partial dismantling	3:00
		2. Inspection	2:00
		3. Reassembly	3:00
7.	4.11.4	Engine speed Synchronizing gear	**8:00**
		1. Examination	3:00
		2. Demonstration	2:00
		3. Principles	3:00
8.	4.11.4	Generators and gauges	**10:00**
		1. Dismantling	2:00
		2. Inspection	2:00
		3. Reassembly	2:00
		4. Calibration checks	4:00

SYLLABUS FOR SEMESTER V (Practical)

COMMUNICATION AND NAVIGATION SYSTEMS – III

Sl. No.	Ref. No. / Units	Practical / Demonstration	Total Hrs 50
(1)	(2)	(4)	(6)
1.	4.13.4	Transmission lines	2:00
2.	4.13.4	Different types of Antennas	3:00
3.	4.13.4	Current and futures developments	5:00
		SAT com, GPS, SATNAV and MADGE	
		Systems Introduction and Explanation	
4.	4.13.4	TCAS – Traffic Alert and Collision Avoidance System	3:00
5.	4.13.4	Frequency measurements	2:00
6.	4.13.4	Radio Navigation – Radio altimeter	4:00
7.	4.13.4	Doppler Navigation System	4:00
8.	4.13.4	Micro wave Landing System (MLS)	3:00
9.	4.13.4	Hyperbolic NAV system	6:00
10.	4.13.4	Weather Radar	10:00
11.	4.13.4	DME	4:00
12.	4.13.4	ATC transponder (SSR)	4:00

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SYLLABUS FOR SEMESTER V (Practical)

AVIONICS SYSTEM MAINTENANCE

S.No	Ref. No	Topics	Hrs 30
I	----	**Aircraft Instrumentation**	**10:0**
1		- Auto / flight control system functional check	2:00
2		- EICAS – Engine Indication and Crew Alert system, Familiarization of different components and location and inspection procedures	2:00
3		- IRS – Inertial Reference System – functional check	2:00
4		- FDI – Flight Director indicator, functional check	2:00
5		- RRC – Remote Reading Compass, functional check	2:00
II		**Aircraft Electrical System**	**10:0**
1		- EDS – Electronic Display System(central warning system, master warning, caution lights and annunciator panel) familiarization of different parts location and functional check as per approved inspection procedure and maintenance rocedure)	2:00
2		- CWS,CDU,CRT - Familiarize functional check as per approved maintenance procedure	2:00
3		- ECAM – Electronic Centralized Aircraft Monitor – Familiarizelocation functional check and approved maintenanceprocedure	2:00
4		- EFIS – Electronic Flight Instrument System – Familiarize functional check and approved maintenance procedure	2:00
5		- FMS,MCDU,BITE,BPCU,CMCS – Familiarize functional inspection as per approved maintenance procedure	2:00
III		**Aircraft Radio System**	**10:00**
1		FMS – familiarize functional check as per approved maintenance procedure	2:00
2		- FMC - familiarize functional check as per approved maintenance procedure	2:00
3		- FCC - familiarize functional check as per approved maintenance procedure	1:00

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4		- TMC - familiarize functional check as per approved maintenance procedure	2:00
5		- ADC - familiarize functional check as per approved maintenance procedure	1:00
6		- MFD - familiarize functional check as per approved maintenance procedure	1:00
7		- MPU and CDU - familiarize functional check as per approved maintenance procedure	1:00

. AIR LAW, AIRWORTHINESS REQUIREMENTS -I			
S.No	**CAR Ref:**	**DESCRIPTION**	**Hours :**
1		**AIR LAW, AIRWORTHINESS REQUIREMENTS -I (CAR Section -2 Series A to I)**	**Allotted 110**
1.1	**Aircraft Manual (India)**	**Aircraft Act 1934:**	**1**
		Aircraft Rules 1937	
		Part I Preliminary, Part II General Conditions for flying	**1**
		Part III General Safety Conditions, Part IV Registration and Marking of Aircraft	**1**
		Part V Personnel of Aircraft, Part VI Airworthiness	**1**
		Part VII Radio Telegraph Apparatus, Part VIII Aeronautical Beacons, Ground Lights and false lights, Part IX Log books	**1**
		Part X Investigation of Accidents and Incidents, Part XI Aerodromes, Part XII A Regulatory Provisions	**1**
		Part XII B Engineering, Inspection and Normal requirements other than Operations, Part XIII Air transport Services.	**1**
		Part XIII A Engineering , Inspection and Manual requirements, Owners or Operators, Part XIV General	**1**
		Schedule I: Areas over which flied by aircraft is prohibited	**3**
		Schedule II : Aircraft Personnel	
		CAR ON Rules of the Air	**2**
		The Indian Aircraft Rules 1920	**1**
		The Aircraft (Public Health) Rules 1954	**2**
		Notifications under Aircraft Act (Public Health) Rules 1954	**1**
		The Aircraft (Demolition of Obstructions caused by buildings and trees etc.	**1**
		The Aircraft (Carriage of dangerous goods) Rules 2003	**1**
		Statutory Notification effecting Aviation in India	**1**
1.2		Knowledge of Civil Aviation Requirements relating to airworthiness**, Aeronautical Information Circulars: Advisory Circulars: and AME Notices** issued by DGCA.CAR **amendments** and incorporation.	**5**
1.3	**CAR Sec 2 Series A**	**Procedure for Issue of Civil Airworthiness requirements and Responsibility of Operator vis a vis Airworthiness directorate**:	**1**
		Part I Cancelled	
		Part II Cancelled	
		Part III: Objects and targets of airworthiness Directorate of civil aviation department.	
		Part IV: Airworthiness regulation and safety oversight of engineering activities	**2**
1.4	**CAR Sec 2 Series B**	**Part I Approval of Check List, MEL, CDL** :	**2**
		Part II Minimum Equipments List/ CDL and preparation.	
		Part III Use of cockpit and emergency checklist.	

1.5	**CAR Sec 2 Series C**	**Defect Recording, monitoring, Investigation and Reporting**:	**2**
		Part I Defect recording, reporting, investigation, rectification and analysis.	
		Part II Recording of inflight instrument reading and reporting of flight	**1**
		Part III Reporting/rectification of defects observed on all aircraft except public transport aircraft.	**1**
		Part IV Analytical study of inflight instrument readings/recording of	**1**
		Part V Maintenance control by reliability method.	
1.6	**CAR Sec Series D**	**Aircraft maintenance Programmes** : Part I Reliability program of engines. Part II Aircraft Maintenance program and their approval	**1**
		Part III On condition maintenance of engines.	**1**
		Part IVApproval of TBO and revision program.	**1**
		Part V Maintenance of fuel and oil uplift and consumption records of light aircraft engines.	**1**
		Part VI Fixing of routine maintenance periods of components, TBOs - initial as well as revision	**1**
		Part VII Cancelled	
	CAR 21	Certification procedure for aircraft and related products	
1.7	**CAR Sec 2 Series E**	**Approval of organizations**: E Part I Approval of organizations/Operators	**1**
		E Part II Cancelled	
		E Part III Cancelled	
		E Part IV Cancelled	
		E Part V Cancelled	
		E Part VI Cat E - Fuel, Lubricant and special petrolium products	**1**
		E Part VII Cancelled	
		E Part VIII Approval of organisation - Cat G - Training Schools/Establishments	**1**
		E Part IX Requirements for infrastructure at stations other than parent base.	**1**
1.8	**CAR 145**	Approved Maintenance Organizations: General, Applicability, Scope, Application, Terms of approval, Facility requirements, Personnel requirements.	**5**
		Certifying Staff and appropriately qualified DGCA licensed Engineers, supporting staff, Equipment tools and materials.	**5**
		Acceptance of components, Maintenance data, Production planning, Certification of maintenance, Maintenance records, Occurring reporting, Safety and Quality Policy, Maintenance Procedure and quality system	**5**
		Maintenance Organisation Exposition, Privileges of the Organisation, limitations on the Organisation, Changes to the Organisation.	**5**

SYLLABUS FOR SEMESTER I (Theory)

1. AIR LAW, AIRWORTHINESS REQUIREMENTS –I

Sl No	CAR Ref:	DESCRIPTION	Hours :
1		**AIR LAW, AIRWORTHINESS REQUIREMENTS -I (CAR Section -2 Series A to I)**	**Allotted 110**
1.9	**CAR Sec 2 Series F**	**Airworthiness and Continued Airworthiness**	
		PART - I Procedures of registration of aircraft.	**1**
		PART - II Cancelled	
		PART - III Procedure and requirements for issue/ revalidation of C of A.	**1**
		PART - IV Cancelled	
		PART - V Supension of C of A and its subsequent revalidation	
		PART - VI Rebuilding of aircraft.	**1**
		PART - VII Special Flight permits	**1**
		PART - VIII . Maintenance and certification of aircraft	**2**
		PART - IX Cancelled	
		PART - X Airworthiness of aging aircraft	
		PART - XI Cancelled	**2**
		PART - XII Inspection of wooden aircraft.	**1**
		PART - XIII Airworthiness requirements for gliders.	**1**
		PART - XIV, XV Registration and airworthiness of Micro light aircraft, Hot air Balloons.	**1**
		PART - XVI Approval of Flight manuals and their amendments.	**1**
		PART - XVII Pooling of aircraft parts by National Airlines of India with Foreign airlines.	**1**
		PART - XVIIIConstruction, Certification and operation of experimental / amateur built aircraft.	**2**
		PART - XIX Cancelled	**2**
		PART - XX Age of aircraft to be imported for character hire or air taxi and other operations.	**1**
		PART - XXI Import/Export of aircraft, spares, item of equipment etc, for use on aircraft.	**1**
		PART - XXII Load and trim sheets- requirements thereof.	**1**

1. AIR LAW, AIRWORTHINESS REQUIREMENTS –I

SI. No	CAR Ref:	DESCRIPTION	Hours :
1		**AIR LAW, AIRWORTHINESS REQUIREMENTS -I (CAR Section -2 Series A to I)**	**Allotted 110**
1.10	**CAR Sec 2 Series H**	**Requirements of Aircraft Fuel, refilling of aircraft and Calibration of Aircraft fuels :**	**2**
		Un usable fuel supply - calibration of fuel quantity gauge of aircraft,	
		Aircraft fueling procedures.	**2**
		Aviation fuel at airport-storage, handling and quality control.	**1**
1.11	**CAR Sec 2 Series I**	**Aircraft Instruments, Equipment and Accessories**:	**1**
		Aircrafts instruments overhaul and periodic inspections.	
		Aircraft equipment and instruments.	**1**
		Maintenance of test equipments.	**1**
		Airworthiness of Procedures for clean rooms and environments for aircraft systems/ accessories shop.	**1**
		Flight data recorders.	**1**
		Cockpit voice recorders	**1**
		Ground Proximity Warning Systems (GPWS).	**1**
		Installation of airborne collision avoidance systems (ACAS).	**1**
1.12	**CAR M**	CONTINUING AIRWORTHINESS REQUIREMENTS	15
		GENERAL	1
		SECTION A - TECHNICAL REQUIREMENTS	1
		SUBPART A GENERAL	1
		SUBPART B ACCOUNTABILITY	1
		SUBPART C CONTINUING AIRWORTHINESS	1
		SUBPART D MAINTENANCE STANDARDS	1
		SUBPART E COMPONENTS	1
		SUBPART F MAINTENANCE ORGANISATION	1
		SUBPART G CONTINUING AIRWORTHINESS MANAGEMENT	1
		SUBPART H CERTIFICATE OF RELEASE TO SERVICE	1
		SUBPART I AIRWORTHINESS REVIEW CERTIFICATE	1
		APPENDICIES	1
		Acceptable Means of Compliance to CAR- M	1
		SECTION B PROCEDURE FOR DGCA	1
		SECTION B PROCEDURE FOR DGCA – AMC	1
			1

AIRCRAFT MAINTENANCE ENGINEERING

(Mechanical)

S.No	SUBJECT	Hours Alloted
1.	AIRCRAFT STRUCTURES	50
2.	POWER PLANT - PISTON ENGINE (part I)	50
3.	AIRCRAFT SYSTEMS PART I	60
4.	AIRCRAFT INSTRUMENTS PART I	40
5.	BASIC AVIONICS:	60
6.	AIRCRAFT SYSTEM PART - II	95
7.	PISTON ENGINES SYTEMS	65
8.	PROPELLERS	50
9.	CORROSION PROTECTION & CONTROL	50
10.	GROUND HANDLING & SAFETY	40
11.	AIRCRAFT MAINTENANCE PRACTICE	40
12.	GAS TURBINE ENGINES (Basic)	60
13.	GASTUBINE ENGINE SYSTEMS	100
14.	AIRFRAME INSPECTION PROCEDURE	120
15.	INTRODUCTION TO HELICOPTER	60
16.	ENGINE & PROPELLER INSPECTION PROCEDURE	120
17.	(PISTON & JET ENGINE)	60
18.	PISTON ENGINE MAINTENANCE	120

DIPLOMA IN AERONAUTICAL ENGINEERING

FIRST YEAR SYLLABUS

CODE	SUBJECT	INTERNAL	EXTERNAL	TOTAL
DAE - 101	Applied Science	25	75	100
DAE 102	Communication Skills	25	75	100
DAE 103	Engineering Drawing	25	75	100
DAE 104	Basic Principles of Applied Mechanics	25	75	100
DAE 105	Computer Application-I	25	75	100
DAE 106	Engineering Drawing-II	25	75	100
DAE 107	Aircraft Elements	25	75	100
DAE 108	Applied Mechanics Lab	25	75	100
DAE 109	General Workshop Lab-1	25	75	100
DAE 110	Aircraft Elements Lab	25	75	100
DAE 111	General Engineering Lab	25	75	100
DAE 112	General Workshop Lab-II	25	75	100
TOTAL		300	900	1200

SECOND YEAR SYLLABUS

CODE	SUBJECT	INTERNAL	EXTERNAL	TOTAL
DAE 201	Mechanical Engg. Drawing	25	75	100
DAE 202	Mechanics of Fluids	25	75	100
DAE 203	General Workshop Practice-III	25	75	100
DAE 204	Basic & Digital Electronics	25	75	100
DAE 205	Power Plant Construction	25	75	100
DAE 206	Aircraft Materials & Processes	25	75	100
DAE 207	Aircraft Instruments –I	25	75	100
DAE 208	Aircraft Structure	25	75	100
DAE 209	Aircraft System-1	25	75	100
DAE 210	Power Plant System	25	75	100
DAE 211	Maintenance Concept & Practice	25	75	100
DAE 212	Practice Minor Project Work	25	75	100
TOTAL		300	900	1200

THIRD YEAR SYLLABUS

CODE	SUBJECT	INTERNAL	EXTERNAL	TOTAL
DAE 301	Aircraft instruments-II	25	75	100
DAE 302	Computer application-II	25	75	100
DAE 303	Testing and measurement	25	75	100
DAE 304	Aircraft system-II	25	75	100
DAE 305	Maintenance concept & practice-II	25	75	100
DAE 306	Advanced Airframe structure-I	25	75	100
DAE 307	Advanced propulsion-gas turbine engine construction	25	75	100
DAE 308	Aircraft system-III	25	75	100
DAE 309	Maintenance concept &practices –III	25	75	100
DAE 310	Industrial Engg.Practices	25	75	100
DAE 311	Advanced Airframe structure-II	25	75	100
DAE 312	Advanced propulsion gas turbine engine maintenance	25	75	100
DAE 313	Project work	25	75	100
TOTAL		325	975	1300

B.B.A DEGREE (AVIATION MANAGEMENT)

FIRST SEMESTER

	Subjects	Paper	Duration Of Exam (hrs)	Credits
Part 1 **Languages**	**Language:** Kannada / Sanskrit / Urdu / Tamil / Telugu / Malayalam / Additional English / Marathi / Hindi	1.1	3	2
	Language: English	1.2	3	2
Part 2 **Optional**	Fundamentals of Management	1.3	3	2
	Accounting& Management Decisions	1.4	3	2
	Quantitative techniques for Management – I	1.5	3	2
	Introduction to Airline Industry	1.6	3	2
Part 3 **Practicals**	Practicals on Skill Development*	-	-	2
Part 4	Foundation Course	-	2	2
	CC&EC	-	-	1
		Total Credits		**17**

SECOND SEMESTER

	Subjects	Paper	Credits
Part 1 **Language**	**Language:** Kannada / Sanskrit / Urdu / Tamil / Telugu/Malayalam / Additional English / Marathi / Hindi	2.1	2
	Language: English	2.2	2
Part 2 **Optional**	Organizational Behavior (with Experiential Learning)	2.3	2
	Strategic Human Resource Management	2.4	2
	Quantitative techniques for Management - II	2.5	2
	Aviation Security and Safety Management	2.6	2
Part 3 **Practicals**	Practicals on Skill Development*	-	2
Part 4	Foundation Course	-	2
	CC&EC	-	1
		Total Credits	**17**

THIRD SEMESTER

	Subjects	Paper	Credits
Part 1 **Language**	**Language:** Kannada / Sanskrit / Urdu / Tamil / Telugu/Malayalam / Additional English / Marathi / Hindi	3.1	2
Part 2 **Optional**	**Corporate Communication Skills 1**	3.2	2
	Production and Operations Management	3.3	2
	Marketing and Retail Management	3.4	2
	E-Business Information Systems	3.5	2
	Cost and Management Accounting	3.6	2
	Aviation Law and Aircraft rules & Regulations	3.7	2
Part 3 **Practicals**	Practicals on Skill Development	-	2
Part 4	Foundation Course	-	2
	CC&EC	-	1
		Total	**19**

FOURTH SEMESTER

	Subjects	Credits
Part 1 **Language**	**Language:** Kannada / Sanskrit / Urdu / Tamil / Telugu/Malayalam / Additional English / Marathi / Hindi	2
Part 2	**Corporate Communication skills II**	2
	Business Research Methods	2
	Financial Management	2
	Business Regulations	2
	Travel and Tourism Management	2
	Logistics & Air cargo Management	2
Part 3 **Practicals**	Practicals on Skill Development*	2
Part 3	Foundation Course	2
	CC&EC	1
		19

FIFTH SEMESTER

	Subjects	Credits
Part 2 **Optional**	Goods and services Taxes	3
	Income Tax I	3
	Investment Analysis and Management	3
	Air Craft Maintenance Management	3
	Cabin Crew Management	3
	Finance and Insurance in Aviation	3
Part 3	**SDC** - Mini Project*	3
Part 4	**AECC** - Pre-Placement Soft Skill Training***	3
		24

SIXTH SEMESTER

	Subjects	
Part 2 **Optional**	Entrepreneurship Development Programme	3
	Income Tax- II	3
	Marketing Management	3
	Strategic and Performance Management	3
	Airport Strategic Planning	3
	Principles of Airline and Airport Management	3
Part 3	**SDC –** Dissertation	3
Part 4	**AECC** - Placement Training***	3
		24

M.B.A.

(AVIATION MANAGEMENT)

SEMESTER – I

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
Theory							
1	PAT101	Airline and Airport Management	3	0	0	3	3
2	PBA101	Data Analysis for Business Decisions*	3	1	0	4	4
3	PBA102	Economic Analysis for Business Decisions*	3	0	0	3	3
4	PBA104	Organizational Behaviour *	3	0	0	3	3
5	PBA106	Accounting for Management *	3	1	0	4	4
6	PAT102	Airline Marketing Management	3	0	0	3	3
7	PBA204	Human Resources Management	3	0	0	3	3
Practical							
8	PBA208	Business Application Software *	0	0	3	1	3
		Total				**24**	**26**

SEMESTER – II

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
Theory							
1	PAT201	Airline Operation and Scheduling **	3	1	0	4	4
2	PAT202	Airline Finance	3	1	0	4	4
3	PAT203	Aviation Law	3	0	0	3	3
4	PAT204	Aviation Safety Management and Accident Investigations **	3	0	0	3	3
5	PBA206	Strategic Management *	3	0	0	3	3
6	PBA103	Total Quality Management *	3	0	0	3	3
7	PBA207	Research Methods in Business *	3	0	0	3	3
8	PBA105	Communication Skills and Business Correspondence *	3	0	0	3	3
Practical							
9	PBA209	Personality Development/ Seminar/ GD/ Case Study	0	0	2	1	2
		TOTAL				**27**	**28**

SEMESTER III

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
Theory							
1	PBA301	Airline Operation and Scheduling **	3	1	0	4	4
2	PBA302	Airline Finance	3	1	0	4	4
3	PAT703	Aviation Law	3	0	0	3	3
4	PAT704	Aviation Safety Management and Accident Investigations **	3	0	0	3	3
5		Electives III	3	0	0	3	3
6		Electives IV	3	0	0	3	3
7		Electives V	3	0	0	3	3
8		Electives VI	3	0	0	3	3
Practical							
9	PBA303	Summer Project Work	-	-	4	2	4
10	PBA304	Seminar II (Emerging Trends in Management - Case Study Analysis and Seminar)	0	0	2	1	2
		Total				**27**	**30**

SEMESTER IV

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
1	PBA401	Project Work	-	-	24	12	24
		TOTAL				**12**	**24**

LIST OF ELECTIVES

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
Theory							
1	PAT701	Aircraft Maintenance Management **	3	0	0	3	3
2	PAT702	Aircraft Rules and Regulation C.A.R I and II	3	0	0	3	3
3	PAT703	Airline Economics	3	0	0	3	3
4	PAT704	Airline Advertising and Sales Promotion	3	0	0	3	3
5	PAT708	Customer Relationship Management *	3	0	0	3	3
6	PAT716	Insurance and Risk Management *	3	0	0	3	3
7	PAT723	Cross Cultural Management *	3	0	0	3	3
8	PAT705	Supply Chain Management	3	0	0	3	3
9	PAT706	E - Business	3	0	0	3	3

PILOT TRAINING

Parameters	Commercial Pilot License (CPL)	Private Pilot License (PPL)
Subjects Taught	Air Regulation, Air Navigation Air Law General Navigation Radio Navigation Performance Aircraft General Knowledge Meteorology Human Performance and Limitations Principles of Flight Mass and Balance Communications Flight Planning and Monitoring Operational Procedures Simulator Training	Composite (Air Regulation, Air Navigation & Meteorology), Technical General and Technical Specific Aircraft General Knowledge Meteorology Human Performance and Limitations Principles of Flight Mass and Balance Communications Flight Planning and Monitoring Operational Procedures Simulator Training
Duration	1 to 2 years	6 months

Air Hostess/ Cabin Crew

Training	Air Hostess/ Cabin Crew
Subjects Taught	Aircraft Familiarization Emergency Situation Handling Food & Catering Services Airport Familiarization Flight Evaluation Communication Skills First Aid Passenger Psychology Leadership and Inter-Department Coordination Technical Training (Basic Aircraft Functions, Safety Procedures, etc.) In-flight Procedures Passenger Handling Personality Development Grooming and Presentation
Duration	8 Months

Diploma of Aviation Medicine

FIRST YEAR	SECOND YEAR	DURATION
Semister One • Aviation Physiology • Hazards of Aviation Environment	**Semester One** • Human Factors in Aviation • Aviation Safety and Accident Investigation	**6 Months**
Semester Two • Regulatory Aviation Medicine • Clinical Aviation Medicine	**Semester Two** • Operational Aviation Medicine • Professional Practice	**6 Months**

Degree In Aviation Disaster

FIRST YEAR	SECOND YEAR	DURATION
Semister One • Basic Concept of Disaster Management • ICAO Annex's explained • Airport Emergency Plans • Planning in conjunction with other Airport users • Natural Disaster on Environment & Man Made Disaster	**Semester One** • Emergency Planning – Casualty Management and Loss Assessment • Community Based Disaster Management and Capacity Building • Humanitarian response • Case studies and practical workshops during the course	**6 Months**
Semester Two • Strategy on Disaster Risk Reduction • Planning in conjunction with other Airport users • Planning with Emergency Services Centres • Emergency Levels and Call Signs • Atmospheric Disaster	**Semester Two** • Disaster Management Education • Impact of Disaster on Environment • Safety Management Systems • Good knowledge and application of Emergency Plans • How we respond to a disaster • The role of the Airport Authority in the event of a disaster	**6 Months**