AEC-501
AIRCRAFT STRUCTURE- II

UNIT I FUNDAMENTALS OF STRUCTURAL ANALYSIS

Basic Elasticity: stress, notation for forces and stresses , equation of equilibrium, plane stress, Boundary conditions, determination of stresses on inclined planes, principal stresses, strain, Compatibility equations, plane strain, determination of strains on inclined planes principal Strains, stress-strain relationship.

UNIT II BENDING OF THIN WALLED BEAMS

Bending of open and closed thin walled beams: Symmetrical bending, unsymmetrical bending, deflection due to bending, calculation of section properties, application of bending theory, temperature effects, and numerical problems.

UNIT III TORSION OF THIN WALLED BEAMS

Torsion of beams: torsion of closed section beams, torsion of multi-cell section, shear centre, properties of shear center, numerical problems.

UNIT IV SHEAR FLOW

Bredt-Batho formula, Shear flow in open section, Shear flow in closed section, shear flow in boom section, combination of open and close section.

UNIT VAIRWORTHINESS AND AIRFRAME LOADS

Airworthiness, factor of safety-flight envelope, load factor determination, loads on an aircraft, safe life and fail safe structure, fatigue, creep and relaxation, materials used in an aircraft.

TEXT BOOKS

1. Megson T.H.G., Aircraft Structure for engineering students, Edward Arnold.
2. Perry D.J. and Azar J.J., Aircraft Structures, McGraw hill.

REFERENCE BOOKS

1. Analysis of A/C Structure by Bruce K. Donaldson (Cambridge Aerospace Series).
2. Theory & Analysis of Flight Structure ‘by Rivello, R.M., McGraw Hill.

LIST OF EXPERIMENTS

1. Verification of Maxwell‘s Reciprocal theorem & principle of superposition.
2. Shear center location for open sections.
3. Deflection of beams with various end conditions for different load.
4. Shear center location for closed sections

AEC- 502
AERODYNAMICS-II

UNIT-I FUNDAMENTAL ASPECTS OF COMPRESSIBLE FLOW

Compressibility, Continuity, Momentum and energy equation, Calorically perfect gas, Mach number, speed of sound –Velocity relation, Mach cone, Mach angle, One dimensional Isentropic flow through variable area duct, Static and Stagnation properties, Critical conditions, Characteristic Mach number, Area-Mach number relation, Maximum discharge velocity.

UNIT-II SHOCK AND EXPANSION WAVES

Normal shock relations, Prandtl's relation, Hugoniot equation, Rayleigh Supersonic Pitot tube equation, Moving normal shock waves, Oblique shocks, Θ-β-M relation, Shock Polar, Reflection of oblique shocks, left running and right running waves, Interaction of oblique shock waves, slip line, Rayleigh flow, Fanno flow, Expansion waves, Prandtl-Meyer expansion, Maximum turning angle, Simple and nonsimple regions, operating characteristics of Nozzles.

UNIT-III TWO DIMENSIONAL COMPRESSIBLE FLOW

Potential equation for 2-dimensional compressible flow, Linearization of potential equation, perturbation potential, Linearized Pressure Coefficient, Linearized subsonic flow, Prandtl-Glauert rule, Linearized supersonic flow, Method of characteristics.

UNIT-IV HIGH SPEED FLOW OVER AIRFOILS, WINGS AND AIRPLANE

Supercritical Airfoil Sections, Transonic area rule, Swept wing, Airfoils for supersonic flows, Lift, drag, Pitching moment and Centre of pressure for supersonic profiles, Shock expansion theory, wave drag, supersonic wings, Design considerations for supersonic aircrafts.

UNIT-V SPECIAL TOPICS

Shock-Boundary layer interaction, Wind tunnels for transonic, Supersonic and hypersonic flows, shock tube, Gun tunnels, Supersonic flow visualization, Introduction to Hypersonic Flows.

TEXT BOOKS

1. Anderson, J. D, Modern Compressible Flow, McGraw-Hill & Co., 2002.
2. Rathakrishnan, E, Gas Dynamics, Prentice Hall of India, 2004.

REFERENCES

1. Shapiro, A. H., Dynamics and Thermodynamics of Compressible Fluid Flow, Ronald Press, 1982.
2. Zucrow, M. J. and Anderson, J. D., Elements of Gas Dynamics, McGraw- Hill &Co.

3. Oosthuizen, P.H., & Carscallen, W.E., Compressible Fluid Flow, McGraw- Hill &Co.

LIST OF EXPERIMENTS

1. The lift and drag over an NACA-0012 Aerofoil
2. Study of shock tube
3. Study of supersonic aircraft vehicle.
4. Shock wave generation over the spacecraft.
5. Study of subsonic compressible flow.

AEC-503
AIRCRAFT PROPULSION –II

UNIT I AIRCRAFT GAS TURBINES

Impulse and Reaction Types of gas turbines – Velocity triangles and power output –Elementary theory Vortex theory – Choice of blade profile, pitch and chord – Estimation of stage performance– Limiting factors in gas turbine design- Overall turbine performance – Methods of blade cooling –Matching of turbine and compressor – Numerical problems.

UNIT II RAMJET PROPULSION

Operating principle – Sub critical, critical and supercritical operation – Combustion in ramjet Engine – Ramjet performance – Sample ramjet design calculations – Introduction to scramjet Preliminary concepts in supersonic combustion – Integral ram- rocket- Numerical problems.

UNIT III FUNDAMENTALS OF ROCKET PROPULSION

Operating principle – Specific impulse of rocket - Rocket nozzle classification – Rocket performance considerations – Numerical Problems.

UNIT IV CHEMICAL ROCKETS

Solid propellant rockets – Selection criteria of solid propellants – Important hardware components of solid rockets – Propellant grain design considerations – Liquid propellant rockets– Selection of liquid propellants – Thrust control in liquid rockets – Cooling in liquid rockets –Limitations of hybrid rockets.

UNIT V ADVANCED PROPULSION TECHNIQUES

Electric rocket propulsion – Ion propulsion techniques – Nuclear rocket – Types – Solar sail- Preliminary Concepts in nozzle less propulsion.

TEXT BOOKS

1. Anderson J.D. Introduction to flight, McGraw Hill Education (India) Pvt. Ltd.
2. Ganesan V. Gas Turbines, McGraw Hill Education (India) Pvt. Ltd.
3. Sutton, G.P., “Rocket Propulsion Elements”, John Wiley & Sons Inc., New York, 5thEdn.

REFERENCES

1.Cohen, H., Rogers, G.F.C. and Saravanamuttoo, H.I.H., “Gas Turbine Theory”, Longman Co., ELBS Ed., 1919.
2. Gorden, C.V., “Aero thermodynamics of Gas Turbine and Rocket Propulsion”, AIAA Education Series, New York, 1919.

LIST OF EXPERIMENTS

1. Water Rocket
2. Water jet study
3. Calorific value estimation
4. Ignition Delay Measurement
5. Identification of burning rate

AEC 504 (A)
BASICS AIRCRAFT MAINTENANCE & REPAIR

UNIT-I WELDING IN AIRCRAFT STRUCTURE

Equipment used in welding shop and their maintenance – Ensuring quality welds –Welding jigs and fixtures – Soldering and brazing.

SHEET METAL REPAIR AND MAINTENANCE

Inspection of damage – Classification – Repair or replacement – Sheet metal inspection – N.D.T. Testing – Riveted repair design, Damage investigation.

UNIT-II PLASTICS AND COMPOSITES IN AIRCRAFT

Review of types of plastics used in airplanes – Maintenance and repair of plastic components – Repair of cracks, holes etc., various repair schemes – Scopes. Inspection and Repair of composite components – Special precautions.

UNIT-III AIRCRAFT JACKING AND RIGGING

Airplane jacking and weighing and C.G. Location. Balancing of control surfaces –Inspection maintenance. Helicopter flight controls. Tracking and balancing of main rotor.

UNIT-IV REVIEW OF HYDRAULIC AND PNEUMATIC SYSTEM

Trouble shooting and maintenance practices–Service and inspection–Inspection and maintenance of landing gear systems. – Inspection and maintenance of air-conditioning and pressurization system, water and waste system. Installation and maintenance of Instruments –handling– Testing – Inspection. Inspection and maintenance of auxiliary systems. Position and warning system.

UNIT-V SAFETY PRACTICES

Hazardous materials storage and handling, Aircraft furnishing practices – Equipment's. Trouble Shooting - Theory and practices.

TEXT BOOK

KROES, WATKINS, DELP, "Aircraft Maintenance and Repair", McGraw-Hill, New York, 1992.

REFERENCES

1. LARRY REITHMEIR, "Aircraft Repair Manual", Palamar Books, Marquette, 1992. 2. BRIMM D.J. BOGGES H.E., "Aircraft Maintenance", Pitman Publishing corp. New York.

AEC- 504 (B)
HELICOPTER AERODYNAMICS

UNIT I-ELEMENTS OF HELICOPTER AERODYNAMICS

Configurations based on torque reaction-Jet rotors and compound helicopters- Methods of control — Collective and cyclic pitch changes - Lead - Lag and flapping hinges.

UNIT II- ROTOR THEORY

Hovering performance - Momentum and simple blade element theories – Figure of merit - Profile and induced power estimation - Constant chord and ideal twist rotors.

UNIT III -POWER ESTIMATES

Induced, profile and parasite power requirements in forward flight-Performance curves with effects of altitude- Preliminary ideas on helicopter stability.

UNIT IV-LIFT, PROPULSION AND CONTROL OF VTOL and STOL

AIRCRAFT Various configurations - Propeller, rotor, ducted fan and jet lift - Tilt wing and vectored thrust - Performance of VTOL and STOL aircraft in hover, transition and forward motion.

UNIT V-GROUND EFFECT

Types - Hover height, lift augmentation and power calculations for plenum chamber and peripheral jet machine - Drag of hovercraft on land and water. Applications of hovercraft.

TEXTBOOKS

1. Gessow, A., and Myers, G, C., “Aerodynamics of Helicopter”, Macmillan & Co., N.Y. 1987.
2. McCormick, B, W., “Aerodynamics of V/STOL Flight”, Academic Press, 1987.

REFERENCES

1. Johnson, W., “Helicopter Theory,” Princeton University Press, 1980.
2. McCormick, B, W., “Aerodynamics, Aeronautics and Flight Mechanics” John Wiley, 1995.
3. Gupta, L., “Helicopter Engineering

AEC-504 (C)
THEORY OF VIBRATION

UNIT I INTRODUCTION
Types of vibrations, S.H.M, principle of super position applied to Simple Harmonic Motions. Beats, Fourier theorem and simple problems.

UNIT II UNDAMPED FREE VIBRATIONS & DAMPED FREE VIBRATIONS
Single degree of freedom systems. Undamped free vibration, natural frequency of free vibration, spring and Mass elements, effect of mass of spring, Compound Pendulum.
Single degree of freedom systems, different types of damping, concept of critical damping and its importance, study of response of viscous damped systems for cases under damping, critical and over damping, Logarithmic decrement.

UNIT III FORCED VIBRATION & VIBRATION MEASURING INSTRUMENTS & WHIRLING OF SHAFTS
Single degree of freedom systems, steady state solution with viscous damping due to harmonic force. Solution by Complex algebra, reciprocating and rotating unbalance, vibration isolation, transmissibility ratio. Due to harmonic excitation and support motion. Vibration of elastic bodies – Vibration of strings – Longitudinal, lateral and torsional Vibration.

UNIT IV SYSTEMS WITH TWO DEGREES OF FREEDOM
Introduction, principle modes and Normal modes of vibration, co-ordinate coupling, Generalized and principal co-ordinates, free vibration in terms of initial conditions. Geared systems. Forced Oscillations-Harmonic excitation. Applications: a) Vehicle suspension. b) Dynamic vibration absorber. c) Dynamics of reciprocating Engines.
Continuous Systems: Introduction, vibration of string, longitudinal vibration of rods, Torsional vibration of rods, Euler's equation for beams.

UNIT V NUMERICAL METHODS FOR MULTI-DEGREE FREEDOM SYSTEMS
Introduction, Influence coefficients, Maxwell reciprocal theorem, Dunkerley's equation. Orthogonality of principal modes, Method of matrix iteration-Method of determination of all the natural frequencies using sweeping matrix and Orthogonality principle. Holzer's method, Stodola method.

TEXT BOOKS
Theory of Vibrations W.T.Thomson.

REFERENCE BOOKS
Theory of Vibrations Grover & Nigam

AEC-505 (A)
HEAT AND MASS TRANSFER

UNIT I FUNDAMENTALS

Modes of heat transfer: Conduction –Convection – Radiation.

UNIT II HEAT CONDUCTION

Steady and unsteady state heat conduction in solids - Effect of variation of thermal conductivity on heat transfer in solids –conduction with heat generation –Heat transfer problems in infinite and semi-infinite solids–Critical radius of insulation-Extended surfaces-Application of numerical techniques.

UNIT III FREE AND FORCED CONVECTION

Convection fundamentals: Basic equations, Boundary layer concept, Dimensional analysis Free Convention: Laminar boundary layer equation- Free convection in atmosphere free Convection on a vertical flat plate –Integral method - Empirical relation in free convection – External flow. Forced convection: Forced convection - Laminar and turbulent convective heat transfer analysis in flows between parallel plates, over a flat plate and in a circular pipe. Empirical relations - numerical techniques in problem solving.

UNIT IV RADIATIVE HEAT TRANSFER AND HEAT EXCHANGERS

Concept of black body-Intensity of radiation-Laws of Black body Radiation-Radiation from non-black surfaces- real surfaces –Radiation between surfaces-Radiation shape factors-Radiation shields. HEAT EXCHANGERS: Types-overall heat transfer coefficient- LMTD- NTU method of heat exchanger Analysis.

UNIT V HEAT TRANSFER PROBLEMS IN AEROSPACE ENGINEERING

Heat transfer problems in gas turbine combustion chambers - Rocket thrust chambers Aerodynamic heating - Ablative heat transfer.

TEXT BOOKS

1 Sachdeva, S.C. Fundamentals of Engineering, Heat and Mass Transfer, Wiley Eastern Ltd., New Delhi, 1981.

2. Lienhard, J.H., ―A Heat Transfer Text Book‖, Prentice Hall Inc., 1981.

3. Holman, J.P., ―Heat Transfer‖, McGraw-Hill Book Co., Inc., New York, 6th Edn, 1991.

REFERENCE BOOKS

1. Sachdeva, S.C., ―Fundamentals of Engineering Heat and Mass Transfer‖, Wiley Eastern Ltd., New Delhi, 1981.

2. Sutton, G.P., ―Rocket Propulsion, JohnElements‖WileyandSons, 5thEdn.1986. Mathur, M. and Sharma, R.P., ―Gas Turbine and Jet and Rocket Propulsion‖, Stand

AEC- 505 (B)
AIRCRAFT RULES AND REGULATION

UNIT-I C.A.R. SERIES 'A AND B' C.A.R. SERIES A

Procedure for Civil Air Worthiness Requirements and Responsibility Operators Vis- À-Vis Air Worthiness Directorate Responsibilities of operators / owners-Procedure of CAR issue, amendments etc., Objectives and targets of airworthiness directorate; Airworthiness regulations & safety oversight of engineering activities of operators.

UNIT-II C.A.R. SERIES 'C' AND 'D' C.A.R.SERIES'C'

Defect Recording, Monitoring, Investigation and Reporting Defect recording, reporting, investigation, rectification and analysis; Flight report; Reporting and rectification of defects observed on aircraft; Analytical study of in-flight readings & recordings; Maintenance control by reliability Method.

C.A.R.SERIES'D' – AND AIRCRAFT MAINTENANCE PROGRAMMES

Reliability Programmes (Engines); Aircraft maintenance programme & their approval; on condition maintenance of reciprocating engines; TBO–Revision programme; Maintenance of fuel and oil uplift and consumption records –Light aircraft engines.

UNIT-III C.A.R. SERIES E AND'F'

C.A.R. SERIES E–Approval of Organisation

Approval of organizations in categories A, B, C, D, E, F, & G - Requirements of infrastructure at stations other than parent base.

C.A.R.SERIES'F'–Airworthiness and Continued Air Worthiness

Procedure relating to registration of aircraft; Procedure for issue/revalidation of Type Certificate of aircraft & its engines/propeller; Issue/revalidation of Certificate of Airworthiness.

UNIT-IV C.A.R. SERIES 'L'&'M"

Issue of AME License, its classification and experience requirements, Mandatory Modifications /Inspections.

UNIT-V C.A.R. SERIES 'T'&'X'

Flight testing of (Series) aircraft for issue of C of A; Flight testing of aircraft for which C of A had been previously issued. Registration Markings of aircraft; Weight and balance control of an aircraft; Provision of first aid kits & Physician"s kit in an aircraft; Concessions; Aircraft log books; Document to be carried on board on Indian registered aircraft; Procedure for issue of tax permit.

TEXT BOOKS

1. Aeronautical Information Circulars (relating to Airworthiness) from DGCA 2000.

REFERENCE BOOK

"Aircraft Manual (India) Volume"–Latest Edition, the English Book Store, 17-1, Connaught Circus, New Delhi

AEC- 505 (C)
WIND ENERGY

UNIT I WIND ENERGY FUNDAMENTALS & WIND MEASUREMENTS

Wind Energy Basics, Wind Speeds and scales, Terrain, Roughness, Wind Mechanics, Power Content, Class of wind turbines, Atmospheric Boundary Layers, Turbulence. Instrumentation for wind measurements, Wind data analysis, tabulation, Wind resource estimation, Betz's Limit, Turbulence Analysis.

UNIT II AERODYNAMICS THEORY & WIND TURBINE TYPES

Airfoil terminology, Blade element theory, Blade design, Rotor performance and dynamics, Balancing technique (Rotor & Blade), Types of loads; Sources of loads Vertical Axis Type, Horizontal Axis, Constant Speed Constant Frequency, Variable speed Variable Frequency, Up Wind, Down Wind, Stall Control , Pitch Control, Gear Coupled Generator type, Direct Generator Drive /PMG/Rotor Excited Sync Generator.

UNIT III GEAR COUPLED GENERATOR WIND TURBINE COMPONENTS AND THEIR CONSTRUCTION

Electronics Sensors /Encoder /Resolvers, Wind Measurement : Anemometer & Wind Vane, Grid Synchronization System, Soft Starter, Switchgear [ACB/VCB], Transformer, Cables and assembly, Compensation Panel, Programmable Logic Control, UPS, Yaw & Pitch System : AC Drives, Safety Chain Circuits, Generator Rotor Resistor controller (Flexi Slip), Differential Protection Relay for Generator, Battery/Super Capacitor Charger & Batteries/ Super Capacitor for Pitch System, Transient Suppressor / Lightning Arrestors, Oscillation & Vibration sensing.

UNIT IV DIRECT ROTOR COUPLED GENERATOR

Excited Rotor Synch. Generator / PMG Generator, Control Rectifier, Capacitor Banks, Step Up / Boost Converter (DC-DC Step Up), Grid Tied Inverter, Power Management, Grid Monitoring Unit (Voltage and Current), Transformer, Safety Chain Circuits.

UNIT V MODERN WIND TURBINE CONTROL & MONITORING SYSTEM

Details of Pitch System & Control Algorithms, Protections used & Safety Consideration in Wind turbines, Wind Turbine Monitoring with Error codes, SCADA & Databases: Remote Monitoring and Generation Reports, Operation &Maintenance for Product Life Cycle, Balancing technique (Rotor &Blade), FACTS control & LVRT & New trends for new Grid Codes.

TEXT BOOKS

1. Kaldellis J.K, Standalone and Hybrid Wind Energy Systems, CRC Press, 2010
2. Mario Garcia –Sanz, Constantine H. Houpis, Wind Energy Systems,CRC Press 2012.

REFERENCE BOOKS

1. Freris, L.L., Wind Energy Conversion Systems, Prentice Hall, 1990.

AEC-506 (A)
NANO SCIENCE &TECHNOLOGY

UNIT I
Bonding in atoms and giant molecular solids. Electronic conduction, system classification confined to one, two or three dimension and their effect on properties, top-down and bottom-up processes.

UNIT II
Characterization using scanning electron microscopy (SEM), electro probe microanalysis (EPMA), transmission electron microscopy (TEM) including energy dispersive X-ray (EDX) analysis, electron energy loss spectroscopy (EELS), Auger electron spectroscopy (AES), low energy electron diffraction (LEED), reflection high energy electron diffraction (RHEED).

UNIT III
When photons are used as probes, generally electrons/photons are emitted and are analyzed as light microscopy including confocal and two photon microscopy, X-ray diffraction (XRD), X-ray fluorescence (XRF), X-ray absorption spectroscopy (XAS), infrared spectroscopy (IR), Raman spectroscopy (Raman), Luminescence, and X-ray photo electron spectroscopy (XPS). Proximal probe technique to monitor the interaction between a localized probe and a sample surface.

UNIT IV
Atomic force microscopy (AFM), scanning tunneling microscopy (STM) and scanning tunneling spectroscopy (STS). There is also position-sensitive atom probe (POSAP) spectroscopy. Inorganic nanostructures, optical properties, excitons, pn junctions, phonons, quantum confinement, quantum dots, colloidal quantum dots, characterization and application like biopolymer tagging and light emitting semiconductor quantum dots, Nano magnetism in technology and the challenges.

UNIT V
Chemistry of carbon, light emission from organic molecules, fluorescence and electroluminescence, synthetic metals, carbon nanotubes, nano cuboids, graphene, carbon quantum dots. Carbon nano tube as nano test tube for quantum dot synthesis, functionalized nano particles for biological applications, bio mineralization. DNA as a nanotechnology building block, directed assembly using biomolecules., molecular motors, biological motors, artificial photosynthesis, solar energy transduction.

TEXT BOOKS

1. Nano scale science and technology, John Wiley & Sons., 2005.
3. Electron Microscopy and analysis, 2nd ed. Taylor and Francis, 2000.

REFERENCE BOOKS

1. Quantum dot hetero structures, Wiley, 1999.
2. Magnetic nanostructures, American scientific publishers, 2002.

AEC-506(B)
EXPERIMENTAL STRESS ANALYSIS

UNIT I MEASUREMENTS
Principles of measurements, Accuracy, Sensitivity, and range of measurements.

UNIT II EXTENSOMETERS
Mechanical, Optical, Acoustical, and Electrical extensometers, and their uses. Advantages and disadvantages.

UNIT III ELECTRICAL RESISTANCE STRAIN GAUGES
Principle of operation and requirements of electrical strain gauges. Types and their uses, Materials for strain gauge. Calibration and temperature compensation, cross sensitivity, Rosette analysis. Wheatstone bridge and potentiometer circuits for static and dynamic strain measurements, strain indicators.

UNIT IV PHOTO ELASTICITY
Two dimensional photo elasticity, Concept of light, photo elastic effects, stress optic law, Interpretation of fringe pattern, Compensation and separation techniques, Photo elastic, materials. Introduction to three dimensional photo elasticity.

UNIT V NONDESTRUCTIVE TESTING
Fundamentals of NDT. Radiography, ultrasonic, magnetic particle inspection, Fluorescent penetrant technique, Eddy current testing, Acoustic Emission Technique, Fundamentals of brittle coating methods, Introduction to Moire techniques, Holography, ultrasonic C- Scan, Thermograph, Fiber-optic Sensors.

TEXT BOOKS
1.Srinath,L.S., Raghava,M.R., Lingaiah,K., Garagesha,G., PantB., and Ramachandra,K., "Experimental Stress Analysis", Tata Mc Graw-Hill,NewDelhi,1914.
2. Dally J.W., and Riley,W.F.,"Experimental Stress Analysis", Mc Graw-Hill Inc., New York, 3rd revised edition, 1991,ISBN-13: 978-0071008259.

REFERENCE BOOKS
1. Hetyenyi, M.," Handbook of Experimental Stress Analysis", John Wiley, NewYork,1972.
2. Pollock A.A.,"Acoustic Emission in Acoustics and Vibration Progress", Ed. Stephens R.W.B.,Chapman and Hall,1993.

AEC-506 (C)
AIRPORT MANAGEMENT

UNIT I INTRODUCTION

Development of air transportation, comparison with other modes of transport – Role of IATA, ICAO – The general aviation industry airline – Factors affecting general aviation, use of aircraft, airport: airline management and organization – levels of management, functions of management, Principles of organization planning the organization – chart, staff departments & line departments.

UNIT II AIRLINE ECONOMICS

Forecasting – Fleet size, Fleet planning, the aircraft selection process, operating cost, passenger capacity, load factor etc. – Passenger fare and tariffs – Influence of geographical, economic & political factors on routes and route selection. Fleet Planning: The aircraft selection process – Fleet commonality, factors affecting choice of fleet, route selection and Capitol acquisition – Valuation & Depreciation – Budgeting, Cost planning – Aircrew evaluation – Route analysis – Aircraft evaluation.

UNIT III PRINCIPLES OF AIRLINES SCHEDULING

Equipment maintenance, Flight operations and crew scheduling, Ground operations and facility limitations, equipment's and types of schedule – hub & spoke scheduling, advantages / disadvantages & preparing flight plans – Aircraft scheduling in line with aircraft maintenance practices.

UNIT IV AIRCRAFT RELIABILITY

Aircraft reliability – The maintenance schedule & its determinations – Condition monitoring maintenance – Extended range operations (EROPS) & ETOPS – Ageing aircraft maintenance production.

UNIT V TECHNOLOGY IN AIRCRAFT MAINTENANCE

Airlines scheduling (with reference to engineering) – Product support and spares – Maintenance sharing Equipment and tools for aircraft maintenance – Aircraft weight control – Budgetary control. On board maintenance systems – Engine monitoring – Turbine engine oil maintenance – Turbine engine vibration monitoring in aircraft – Life usage monitors – Current capabilities of NDT – Helicopter maintenance – Future of aircraft maintenance.

TEXT BOOKS

1. FEDRIC J.H., "Airport Management", 2000. 2. C.H. FRIEND, "Aircraft Maintenance Management", 2000. References: 1. Gene Kropf, "Airline Procedures".
2. Wilson & Bryon, "Air Transportation".

REFERENCE BOOKS

1. Philip Locklin D, "Economics Of Transportation".
2. "Indian Aircraft Manual" – Dgca Pub.

AEC-507
INDUSTRIAL TRAINING-I

Industrial training is a type of industrial training program which prepares learners for jobs that are based on manual or practical activities, traditionally non-academic and related to a specific trade, occupation. The duration of this training program should varies from 4 weeks to 6 weeks. It must cover a wide range of subject areas and tends to be more hands on than academic qualifications.