SYLLABUS
FOR
DIPLOMA IN AERONAUTICAL ENGINEERING

INDIAN INSTITUTE OF AERO SPACE TECHNOLOGY AND MANAGEMENT
DIPLOMA IN AERONAUTICAL ENGINEERING

FIRST YEAR SYLLUB

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

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DIPLOMA IN AERONAUTICAL ENGINEERING

DAE-101

APPLIED SCIENCE

RATIONALE

The subject deals with basic concepts, principles and application of physics and chemistry as applied to Aeronautical and Aircraft Maintenance. These principles will be helpful in understanding technology subjects.

DETAILED CONTENTS

1. Units and Dimensions

Fundamental and derived units in S.I. System, Dimensions of physical quantities, Principle of homogeneity. Dimensional equations. Applications of dimensional analysis:

a) Checking the correctness of physical equations
b) Derivation of simple physical relations, and
c) Conversion of units. Limitations of dimensional analysis.

2. Force and Motions

Scalar and Vector quantities, force and its unit, composition and resolution of forces (composition by parallelogram law and by the method of components). Newton's laws of motion, linear motion under the action of forces, motion on horizontal plane and inclined plane. Parabolic motion, horizontal projection and projection at an angle (problems on time of flight, horizontal range and maximum horizontal range) Central forces, circular motion of bodies. Angular velocity, uniform angular acceleration. Relationship between linear and angular velocity, Centripetal and centrifugal forces, centripetal acceleration and centrifugal forces, centripetal acceleration, bending of a cyclist. Law of conservation of momentum and its applications.

3. Work, Power and Energy

Work and its units. Work done on bodies moving on horizontal and inclined planes (consider frictional forces also) Concept of power and its unit. Calculation of power (simple cases). Concept of kinetic energy and potential energy. Expressions of freely falling bodies. Principle of conservation of energy.

4. Rotational Motion

Concept of rotational inertia (mass moment of inertia) Analogy between the parameters in rotational and translational motion (such as displacement, velocity, acceleration, mass, force, work, K.E. Power and momentum). Torque and angular momentum and their inter relationship. Rolling as a combination of rotational and translational motion.

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5.Heat

5.1 Temperature and its measurement
Concept of heat and temperature on the basis of K.E. of molecules. Unit of heat. Basic Principles of measurement of temperature, (thermocouple, thermometer, bimetallic and resistance) Ranges of these thermometers. Criteria for the selection of a thermometer.

5.2 Expansion of Solids and Fluids
Coefficient of linear, surface and cubical expansions and relations amongst them. Thermal stresses (qualitative only)

5.3 Heat Transfer
Three modes of transfer of heat. Coefficient of thermal conductivity. Conduction through compound media (series and parallel for two material only) Radiation. Characteristics of heat radiation. Provost's theory of heat exchange. Black body radiations. Emissive and absorbitivity. Kirchoff's law. Stefan's law of radiation.

6. Metallurgy
General Principles of extracting metals from their ores, metallurgy of copper, aluminium and iron with their properties and uses. Manufacture of Steel. by.

a) Bessemer's process and
b) Open hearth process. Ferrous and non ferrous alloys.

7. Corrosion
Its meaning, theories of corrosion, prevention of corrosion by various methods.

8. Fuels and their Classification

Proximate and ultimate analysis, estimation of moisture, volatile matter, ash, fixed carbon and calorific value determination of calorific value, determination of calorific value by Bomb calorimeter.

Liquid Fuels: Petroleum and its refining into various fractions with their characteristics and uses.

9. Lubrication
Principles to lubrication, characteristics of lubrication such as viscosity, oiliness, acid value and emulsification. Flash point and fire point, pour point, specification, types of lubricants, their properties and uses, liquid (mobile oil), semi solid (grease) and solid types (Graphite)

10. Paints and varnishes
Drying oil, pigment, drier, thinner.

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DAE -102

COMMUNICATION SKILLS

RATIONALE

Diploma holders are supposed to communicate verbally and in writer forms. Further technical report writing forms another essential requirement of these people. Keeping in view above requirements, this subject has been added to develop necessary competencies in written and oral communication. Efforts should be made to give practice of communication to the students.

S.No	Theory
1.	One way and two way communication
2.	Essentials of good Communication
3.	Methods of Communication, Oral, Written and non- verbal
4.	Barriers to communication
5.	Techniques of overcoming barriers
6.	Concept of effective communication
7.	All form of written communication including drafting of reports, notices, agenda notes, business correspondence, preparation of summaries and precis, telegrams, circular, representations, press release and advertisements
8.	Telephonic communication
9.	Essentials of Essentials of technical report writing, Defect reporting, Analysis and how to make suggestions
10.	Writing personnel resume and application for a job
11.	Techniques of Conducting group Discussions
12.	International phonetics of alphabets and numerals.

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DAE-103

ENGINEERING DRAWING-I

RA TIONALE

Engineering Drawing known as the language of engineers is a widely used means of communication among the designers, engineers, technicians, draftsmen and craft men in the industry. The translation of ideas into practice without the use of this graphic language is really beyond imagination. The diploma holder is required to read and interpret the designs and drawings, provided to him for actual execution of the job. This courses and other allied subjects.

DETAILED CONTENTS

Note: IS & Joint Service Specification (JSS) should be followed.

1. Free Hand Sketching
   a) Introducing drawing by free hand sketching.
   b) Different types of lines and Material breaks,

2. Lettering Technique and Practice
   a) Free hand lettering and numerals in 3, 5, 8 and 12 mm series,
   b) Vertical and inclined at 75 (degrees)
   c) Instrumental single stroke lettering in 20 mm.

3. Principles of projection (Third angle projection)
   a) Principle of orthographic projections
   b) Three views of a given object.
   c) Six views of a given object
   d) Some shapes of inclined surfaces
   e) Identification of surfaces from different objects.
   f) Introduction to first angle projection.

4. Dimensioning technique and requirement of views
   a) Necessity of dimensioning
   b) Methods and principles of dimensioning
   c) Requirements of views for complete dimensioning

5. Section
   a) Importance
   b) Method of representing the section
   c) Conventional sections for various materials
   d)Classification of sections
   e) Conventions **in** sectioning

6. Pictorials metric Views
    a) Pictorial view from two or three views
    b) Isometric views of simple objects
    c) Exercise on missing views and lines.

7. Elementary working Drawings
    a) Scales
    b) Working drawing by actual measurement

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DAE 104

BASIC PRINCIPLES OF APPLIED MECHANICS

RATIONALE

The subject "basic principles of applied Mechanics" deals with basic concepts of mechanics like laws of forces, moments, friction, center of gravity, laws of motion and simple machines which are required to the students for further understanding of other allied subjects. The subject enhances the method ability of the students.

DETAILED CONTENTS

1. Laws of Forces

Force and its effects. Units and measurement 0f force. Characteristics of force vector representation. Bow's Notation.

Types of forces, action and reaction, tension, thrust and shear force. Force systems: Coplanar and space forces, free body diagrams.

Resultant and components of forces, concept of equilibrium. Axioms in static; Parallelogram law of forces. Equilibrium of two forces, super position and transmissibility of forces, Newton's third law, triangle of forces, different cases of concurrent, coplanar, two forces systems, extension of parallelogram law and triangle law to many forces acting at one point-polygon law of forces, method of resolution into orthogonal components for finding the resultant, graphical methods, special case of three concurrent, coplanar forces, lami' s theorem.

2. Moments

Concept of moment, varignon's theorem- statement only. Principle of moments- Application of moments to simple mechanism. Parallel forces like and unlike parallel forces, calculation of their resultant, Concept of couple properties and effect, Moving a force parallel to its line of action. General cases of coplanar force system. General conditions of equilibrium of bodies under coplanar forces.

3. Friction

Concept of friction, laws of friction, limiting friction and coefficient of friction, Sliding friction and rolling friction.

4. Center of Gravity

Concept of gravity, gravitational force, centroid and center of gravity. Centroid for regular laminas and center of gravity for regular Solids. Position of center of gravity of compound bodies and centroid of composite area. CG of bodies with portions removed.

5. Laws of Motion

Concept of momentum. Newton's laws of motion, their application. Derivation of force equation from second law of motion. Numerical problems on second law of motion. Piles, lifts, bodies tied with string. Newton's third law of motion numerical problems. Conservation of momentum, impulse and impulsive force (Definition only)

6. Simple Machines

Concept of machine, mechanical advantage, velocity ratio and efficiency of a machine, their relationship, law of machine. Simple machines (lever, wheel and axle, pulleys, jacks with crabs only).

7. STRESSES AND STRAINS

Concept of load, stresses and strain. Tensile compressive and shear stresses and strains. Tensile compressive and shear stresses and strains. Concept of Elasticity, Elastic limit and limit of proportionality. Hook's Law. Young Modulus of elasticity. Yield point, plastic stage. Strain hardening. Ultimate strength and breaking stress. Percentage elongation. Proof stress and working stress. Factor of safety. Shear modulus.

MOMENT OF INERTIA

Concept of moment of inertia and second moment of area. Radius of gyration. Second moment of area of common geometrical sections: Rectangle, Triangle, Circle (without derivation). Second moment of area L, T and I section modulus.

PRACTICAL EXERCISES

1. Tensile test on bars of Mild steel and Aluminium and finding stress, strain and Young's modulus.
2. Shear test on specimen of two different metals.
3. Hardness test on metal and finding the Brinell's Rockwell's hardness.

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CODE:DAE105

COMPUTER APPLICA TION-I

RATIONALE

Computers not only represent modern technology application but also are very important from the point of view of their usefulness to students during and after the course.

The level of knowledge in computers should be such that all students are able to use the machine with ease for calculation, data application and text processing.

The second phase of the course is directed towards computer aided design and manufacturing techniques. Students should be able to carry out computer drafting of technical designs, retrieve old drawings and read them for interpreting. They should also be also be able to store and retrieve information as regard to spares, tools, documents and inventory.

S. No.	Theory
1.	Computer construction and connections
2.	Disk operating system Basics
3.	Dos usage commands
4.	Microsoft Word
5.	Use of spread sheet Basics and formula
6.	Statistics and data base basics
7.	Knowledge of peripherals mouse scanner, Printer
8.	Programming in Basic

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DAE106

ENGINEERING DRAWING-II

DETAILED CONTENTS

1. Detail and Assembly Drawing
    a) Principle of detail and assembly drawings.
    b) Practical exercise on drawing from detail to assembly
    Or vice versa using wooden joints as example.

2. Fasteners I
    Conventional symbols for internal and external threads. Nuts, bolts, studs, screws and their application Practical Application

3. Fasteners II (Welded Joint)
    Various conventions and symbols of welded joining.
    Practical application of welded joints say steel frames, windows, doors and furniture.

4. Rivets and Riveted joints
    a) Types of rivet heads
    b) Types of riveted joints.
5. Keys and cotters
    Various types of keys and cotters and their practical application.

6. Joints for Rods
    a) Grid and cotter joint.
    b) Spigot and socket joint.
    c)
7. Couplings
    a) Flange coupling
    b) Flexible coupling

8. Symbols and convention in aeronautical industry.

9. Limits, Fits and Tolerances
    a) Interchangeability
    b) Tolerance of parts, tolerance zone, grades of tolerances
    c) Fits, types of fits- clearance, interference and transition.
    d) Go, No Go limits

10. Surface Finish and symbols

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CODE:DAE-107

AIRCRAFT ELEMENTS

RATIONALE

This course forms the first exposure to the discipline of Aeronautical Engineering. It starts with familiarization of airplanes and helicopters. The subject is built up slowly and steadily by introducing the terminology and basis of flight mechanics, airplane structures, power plant, systems etc. At the end of the subject, the student will be fully acquainted with the basics of Aeronautical Engineering.

DETAILED CONTENTS

S. No. Theory

1. Introduction

1.1 Flying Machines: History of Aviation, Different types with examples

1.2 Lighter than air type, Balloons and Airships, Heavier than air type, kite, Gliders, aircraft, modes of take off and landing.

1.3 Means of generating lift; flight of Birds and insects, leading to the flight of airplanes And helicopters and Hovercraft.

1.4 Classification of airplanes based on Distinguishable feature and usage along with examples

1.5 Modern developments

2. Principles of Flight
Mechanic Concept of generation of lift force: Concept of angle of attack, drag and pitching moments on and airfoil

2.1 Different airfoil shapes, derivation of formulas
L .= 1/2 V square S CL
D = V2 V square S CL

Variation of lift and drag with angle Of attack. Simple numerical problems

2.2 Flow over a wing and difference from that over an airfoil section

2.3 Wing plan form shapes straight wing, tapered wing, swept back and swept forward wings and their applications

2.4 Control surfaces elevators, ailerons flaps, rudders and their functions. Fly by wire

2.5 Airplane stability and control

3 Introduction to Aircraft Power plants.

3.1 Classification of propulsive units and their deign feature

3.2 Propellers: fixed pitch and variable pitch

3.3 Piston- prop engine: different types and arrangements for multi-cylinder engines

3.4 Jet Engines: Turbo-jet, Turbo-prop, Turbo-fan, fan jet

3.5 Rocket Engines: Solid and Liquid Rocket motors

3.6 Structural features and selection of materials

4 **Aircraft Structures**

4.1 Concept of strength to weight ratio in Aeronautical Engineering

4.2 Introduction of loads on different parts of airplane

4.3 Detailed description of wing, fuselage tail surface

4.4 Wing fuselage attachment various joining methods

4.5 Under carriages : Types and description

5. Passenger comfort system : Need for pressurization ; Oxygen requirements, air conditioning

6. Navigation and communication system- Introduction to different navigation methods, ILS,HF&VHF system

7. Power actuated systems : Introduction to basic hydraulic system ,Pneumatic system , Auto Pilot system

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DAE – 108

Applied Mechanics Lab

PRACTICAL EXERCISES

1. Tensile test on bars of Mild steel and Aluminium and finding stress, strain and Young's modulus.

2. Shear test on specimen of two different metals.

3. Hardness test on metal and finding the Brinell's Rockwell's hardness.

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GENERAL WORKSHOP PRACTICE-I

RETIONAL:

The subject is gateway to the technological/industrial processes. The mental and manual abilities will be developed to handle engineering materials with hand tools with quality and safety consciousness. The elementary, abilities developed in carpentry, fitting machine, welding, sheet metal and electric shop will find applications in other semesters. The emphasis given on Practical work will provide the students the primary experience working in team.

CARPENTRY SHOP

1. Introduction to hand tools
2. Marking and sawing practice
3. Planning Practice
4. Chiselling practice
5. Preparation of half lap joint
6. Preparation of mortise and Tenon joint
7. Preparation of Miter Joint
8. Preparation of dovetail joint and glued joint
9. Practice of handling circular saw

FITTING SHOP

1. Introduction to Fitting Tools.)
2. Filling Practice and production of flat surface and Checking by straight edge
3. Filing a dimensioned rectangular or square piece to an Accuracy of +- 0.25 mm
4. Chipping Practice
5. Hacks awing practice
6. Drilling practice on Soft metals
7. Practice of Filing on nonferrous metals
8. Tapping practice
9. Preparation of some utility job

WELDING SHOP

1. Introduction to welding and its importance, types of welding, Materials that can be welded
2. Gas welding- theory
3. Practice in handling welding equipment
4. Gas welding practice
5. Preparation of butt joint by gas welding
6. Electric arc welding-Theory
7. Welding practice by arc welding
8. Preparation of various types of joints by using arc welding Preparation of utility job

GENERAL WORKSHOP PRACTICE-I

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RATIONALE

The subject is gateway to the technological/industrial processes. The mental and manual abilities will be developed to handle engineering materials with hand tools with quality and safety consciousness. The elementary, abilities developed in carpentry, fitting machine, welding, sheet metal and electric shop will find applications in other semesters. The emphasis given on Practical work will provide the students the primary experience working in team.

DAE111 - GENERAL ENGINEERING

RATIONALE

The students are required to understand all the mechanical aspects of the aircraft in terms of thermodynamics and its application. Knowledge of relationships between pressure, volume and temperature under various operating conditions become necessary to understand functioning of aircraft engines and other power systems.

Similarly the students are required to have basic knowledge of electrical engineering. Electrical engineering is required in the systems.

aircraft engine starting

giving power for communication and radio system for pilot/engineer operation of various instruments

operation of machine

general lighting galley etc.

The individual must be able to operate external power trolleys, APU's and internal batteries, monitor their performance and take remedial actions in case of abnormalities.

DETAILED CONTENTS

Part(A): Mechanical Engineering

1.1 Concept of property, state, process, system cycle, thermodynamic pressure, temperature And volume; Zeroth law of thermodynamics

1.2 Energy Concepts: Potential, Kinetic internal, heat, flow work, work, done

1.3 Perfect Gas: Basic laws, equation of state, gas constant, real gases and deviations in law

2. Thermodynamic laws related to internal combustion and gas turbine engines:

2.1 Basic thermodynamic processes and work done and heat transfer during these processes Constant volume and Constant pressure Isothermal, adiabatic, and polytrophic Free expansion and throttling

2.2 Second law of thermodynamics, reversible and irreversible processes, concepts of internal energy

enthalpy and entropy

2.3 Change of entropy during a process and gas processes on TS diagram

3. Heat Engines and Efficiencies:
3.1 Two and four strokes cycles

3.2 Gas turbine engines: Brayton cycle

Part (B): **Electrical Engineering**
4. Knowledge of electrical terminology like voltage, amperes watts, V A, Ohms, Mhos, KWH

4.1 Components like resistor, capacitors, inductors
4.2 Average, RMS and peak value in AC supply .
5. Ohm's Law and kirchoffs law 6. Electromagnetic Induction: Its application in motors, relays, actuators and micro switches
7. DC and AC generation, constant and variable speed, voltage regulator and its importance
8. Aircraft batteries: its electrolytes, effect of temperature

8.1 Nickel cadmium battery
8.2 Lead Acid battery
8.3 Dry cells

9. AC and DC power supplies used in aircraft

10. Aircraft lighting
10.1 Internal (Normal and emergency) Cockpit, cabin, Toilet
10.2 External landing/taxi lights Anti collision Navigation light/flashers
11. Ignition; Magnetos

12. Emergency labels Fasten seat belts/ Go to seat/No smoking Exit and path signs

13. Protection devices Fuses CB's

14. Static Discharges

DAE 112
GENERAL WORKSHOP PRACTICE-II

ELECTRIC SHOP

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1. Study of electrical safety measures and productive devices
2. Practice of electrical connections by using switch and plug points
3. Study and testing of common electrical appliances
4. Charging a battery and testing it
5. Study of battery connections in series and parallel
6. Laying out three phase wiring of an electrical motor
7. Dismantling, servicing and reassembling a table fan, ceiling fan and air cooler

SHEET METAL SHOP

1. Single row riveting exercises
2. Double row riveting practice
3. Riveting repair by patch
4. Riveting repair by insertion
5. Cutting and bending exercises on Aluminium sheets
6. Pneumatic Riveting Exercise

MACHINE SHOP

1. Turning exercises on lathe
2. Step turning and taper turning exercises
3. Facing and Knurling exercises
4. Threading exercises- Fine and coarse thread
5. Drilling exercises
6. Reaming exercises
7. Exercises on power hacksaw

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SECOND YEAR SYLLUBUS

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

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SECOND YEAR / IV SEMESTER

AVIATION MANPOWER RECRUITMENT INDUCTION AND TRAINING
TRAINING DIVISION
DIPLOMA IN AERONAUTICAL ENGINEERING

DAE 201
MECHANICAL ENGINEERING DRAWING

RATIONALE
Diploma holders in Aeronautical and Maintenance Engineering are required to read and interpret drawings
and therefore, it is essential that they have skills of preparing drawings and sketches of various components, tools, jigs and fixtures, For this purpose, knowledge and skills for preparing drawings of couplings, bearings, bracket, pulleys, pipe joint, and I.c. Engine parts are required to be imparted for
enabling them to work in the field of Avionics. This subject aims at development of drawing competencies
in the students aims at development of drawing, stress should be laid on layout, cleanliness

2.3 plummer block (detailed drawing)
2.4 plummer block (assembled drawing) Foot
2.5 step bearing

3. BRACKET

3.1 Wall Bracket

4. PULLEYS 10 hrs
4.2 Fast and loose pulley

5. Stepped and V-pulley

5.1 flanged pipe joints, right angle bend

5.2 Hydraulic pipe joints, Spigot and socket joint. Expansion Pipe joint.

5.3 Practice of blue print reading on brackets, Pulleys and pipe joints

6. SCREW JACK

7. ENGINE PARTS

7.1 Aircraft piston, connecting rod, valve mechanisms

7.2 Crankshaft and fly wheel assembly

7.3 Linkages

8. DRAWING A AIRCRAFT PARTS 4 sheet

8.1 Aerofoil and NACA

8.2 Wing ribs and body ribs.

9 GEARS 12 hrs

9.1 Use of different types of gears

9.2 Spur gears with actual profile of involutes teeth

9.3 Conventional representation of Bevel gears, worm and worm wheel.

9.4 Introduction to bevel gears.

10. Practice of reading drawings

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DAE202
FLIGHT MECHANICS

RATIONALE

An aircraft capable of flying in spite of its large weight. It has particular shape and becomes air boren beyond certain speeds. In order to appreciate the principles involved in flying it is essential to gain knowledge and skill in the area of mechanics of fluids applied to flying.

Instructors are recommended to design simple suitable tutorial problems and carry out experimental work in the laboratory for better understanding of principles of flight mechanics.

DETAILED CONTENTS

Sf. No. Theory

1. Introduction to Fluid mechanics

Fluid properties: pressure, density, relative density, specific weight, Viscosity, compressibility, surface tension.

1.2 Types of fluids and flow regimes

1.3 Standard atmosphere and its characteristics, aero thermodynamics

2. Flow kinematics:

2.1 Introduction, streamlines, path lines and streak lines, acceleration

2.2 Euler's equation

2.3 Bernoulli's equation

2.4 Vortex motion

3 Fluid Dynamics

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3.1 Momentum equation for flowing fluid

3.2 Non-dimensional numbers: Reynolds; number, match number; coefficients of lift, drag and moment

4 Flight Aerodynamics

4.1 Introduction to 2-D aerofoil and their geometrical parameters; chord, thickness ratio, camber, mean
camber line, angle of attack; Aerofoil characteristics

4.2 Magnums effect and vortex theory, lift and drag on inclined plates

4.3 Boundary layer, skin Friction

4.4 Lift-drag relation, types of drag high drag devices, boundary layer fence, super stall load and factors.

4.5 Pressure distribution and centre of pressure

5. Aircraft performance

Straight and level powered flight

Gliding flight

power stalling and sinking

speeds time of decent and climb, maximum climb rate

6. high sped flows
Governing equations and significance of match number
Sonic flows, sound barrier and shock waves: normal and oblique

6.2 General shape of Supersonic aerofoils

6.3 Wind Tunnels Introduction, types, components and use

6.4 Aircraft stability Rolling, pitching, yawing primary and secondary controls

7. Wind Tunnels Introduction, types, components and use

8. Aircraft stability Rolling, pitching, yawing primary and secondary controls

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DAE 203
GENERAL WORK SHOP-111

DETAILED CONTENTS

Advanced Machine Shop

1. External and Internal Threading Exercises
2. Generation of Flat Surface on Milling Machine
3. Gear cutting on Milling Machine
4. Exercises on grinding machines

Painting Shop

1. Painting and Coating Exercises
2. Spray painting exercises
3. Electroplating and Buffing a component

Advanced Welding Shop

1. Brazing and Soldering exercise
2. Spot and seam welding exercises
3. Exercises do TIG/MIG welding
4. Metal pipe cutting, bending and flaring processes

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DAE204
BASIC AND DIGITAL ELECTRONICS

RATIONALE

Diploma holders in Aircraft Maintenance should have knowledge and skills about electronics instruments being used on the Aircraft. Hence this subject.

Detailed Contents

1. Review or Resistor, Inductor, Capacitor, and transformer, series and parallel combination of R, L and C.

2. Concepts of semiconductors, impurities and conduction intrinsic, and extrinsic. PN junction as a diode, its characteristics and applications as rectifier, temperature dependence of diode characteristics.

3. Transistor and its characteristics in different configurations; FET and MOSFET construction and characteristics, Biasing of BJT and EFT

4. Concept of Amplifier, its gains (indb), input and output, impedances, bandwidth, Multi stage amplifiers (qualitative analysis).

5. Feedback in Amplifier, its effect on gain, band width input and output impedances and noise, Positive feedback and oscillators' (Rc, LC and crystal **type).**

6. Operational Amplifiers, its characteristics and application as adder inverter, integrator, differentiator, comparator, buffer.

7. Current through RL and RC circuits, transistor as a switch with different loads; definitions of AND, OR, NOT, NAND, NOR, EX-OR gates, Specifications of TTL and CMOS logic gates. Truth Tables and logic expressions, Tristate Buffer (only concept) simple problem solving using gates.

8. Review of number systems and their conversions (Decimal, binary and Hexadecimal)

9. Binary arithmetic (1's and 2's complement), half adder, half subtracter, full adder/full subtracter)

10. Latches, Flip/Flops (various types) counters and Registers.

11. Multiplexer/Demultip laxer, Encoder/Decoder.

12. LED/LCD displays, Timer chip 555.

13. Concept of memories – ROM and RAM

DAE 205 Semester - III
POWER PLANT CONSTRUCTION –PISTON ENGINES
DETAILED CONTENTS

Sr. No. Theory

1. Familiarization with different types of engines such as Piston Engines and gas turbine engine.
1.1 Internal combustion heat engines two stroke and four stroke, inline Radial and opposed engines
2. Definitions and terms used in piston engine and classification of engine
3. Power and efficiency their calculations
4. Fundamental requirements construction, classification, material and components and accessories of engine
5. Valve operating mechanism, its parts, valve timing valve clearance their checking and adjustments, instruments and tools used
6. Propeller theory, different types of propeller used, their construction, operation Maintenance and trouble shooting Removal and installations procedure De-icing, enticing and synchronization systems Propeller Balancing, tracking Propeller Governors
6.1 Engine Instruments
7. Power/Thrust boosting devices like water injection, super charger, turbocharger, their construction, operation and maintenance
8. Fuels, oils contamination and prevention.

Aircraft Power Plant Semester – II

3.2 Propellers: fixed pitch and variable pitch

3.3 Piston- prop engine: different types and arrangements for multi-cylinder engines

3.4 Jet Engines: Turbo-jet, Turbo-prop, Turbo-fan, fan jet

3.5 Rocket Engines: Solid and Liquid Rocket motors

3.6 Structural features and selection of materials

INDIAN INSTITUTE OF AERO SPACE TECHNOLOGY AND MANAGEMENT
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DAE 206
Aircraft MATERIALS AND PROCESSES

RATIONALE

The high strength over weight ratio of materials required in Aeronautical Engineering, calls for study of sucb materials by students at this stage. The need for surface treatments against corrosion and for improved strengths is essential. In this regard, various processes of manufacturing are studied in this subject by the students.

DETAILED Contents

1. Introduction
   Importance of strength! Weight ratio in aircraft manufacturing. The factor of temperature variations. Choice of materials for Different parts of airplane.

2. Aluminium Alloys
   Specification of Aluminium alloys for different parts of wing and fuselage, Skin Heat treatment. Corrosion resistance alloys

3. Aircraft Steel
   Classification of alloys steels, Effect of alloying elements, Carbon steel vs alloy steel. Corrosion resistance steels, Heat treatment, Typical alloy steels for different aircraft parts.

4. High strength and heat resistant alloys

Classification of heat resistant materials

Iron nickel and cobalt base alloys

Refractory materials:

Ceramics

Titanium and its alloys Properties of Incone1,

Monel and K-Monal, Nimonic and super alloys

5 Application to Engine parts

5.1 Aircraft woods:

5.2 Use and seasoning of woods

5.3 Fabric and dope plastics, rubber and other synthetic materials

6 Composite materials

6.1 Classification of composite materials, their characteristics

6.2 Laminated composites and particular composites

6.3 Theory of fibber strengthening

6.4 Composites for normal and high temperatures

7. Machine Tools Standard Machine Tools and their applications in Aeronautical engineering field

8. Casting and Forging:
Pattern design: casting methods, precision casting
Casting defects, casting practice as applied to light alloys and alloy steel
Sheet Metal forging hydraulic processes, types of presses and their selection
Forgings: Forging
Operations forge plant equipment
Drop forging: practice as applied to light alloys

9 Metal Joining processes Weld ability, MIG, TIG Welding, are welding resistance Welding, welding of light alloys, Riveting

10. Heat Treatment Practical Methods of treatment equipment Surface Hardening processes and equipment

11. Jigs and Fixtures: General

12**.** Special processes

12.1 profiling, hydro forming mar forming integral machining, contour etching, high energy rate forming

12.2 Method of manufacturing Honey comb structures

12.3 Particular methods of fabricating aircraft and engine parts

13. Manufacture of Plastic and Composite Materials

13.1 Materials and process selection

13.2 Moulding, casting matching and joining of plastics Filament

13. 3 winding

DAE 207
AIRCRAFT INSTRUMENT-I

RATIONALE

Instruments form eyes and ears and are required for monitoring the performance of various systems and the aircraft as a whole.

Students should have adequate knowledge of the working principle and basic construction of all instruments on board and aircraft. They should be able to remove and fit instruments with ease.

Simultaneously the students should be able to identify, fit remove and be familiar with working of CVR (cock pit voice recorder), CDR (crash data recorder), and FDR (Flight Data Recorder)

The knowledge gained should be sufficient to understand interdependence of instruments and identify fault level. The students should also be able to carry out, independently, compass swing on the aircraft.

Teachers have to be cheerful in limiting instructions only to fitment removal and system~ fault diagnosis rather than exhaustive construction details.

DETAILED CONTENTS
Sf. No. Theory

1. General Aircraft Instruments

2. Measurement system transducers, recorders display measure

3. PITOT STATIC SYSTEM
3.1 Principle
3.2 System
3.3 Altimeter
3.4 Rate of climb indicator (ROCI)
3.5 Air Speed Indicator (ASI) and macho meter

4. Position indicators principle Control position, door/ Ramp, machine lights
Engine Instruments Navigation Instruments Electrical Instruments
5. Engine Instruments Navigation Instruments Electrical Instruments

5.1 Fuselage Stations

5.2 Wing stations Butt
5.3 Line stations
5.4 Aircraft Zoning

6. Aircraft fabric, cloth and wood
6.1 Aircraft fabric
6.2 Aircraft Clothes
6.3 Aircraft covering Practice
6.4 Aircraft wood & Wood Working tools
6.5 Wood joints including glue and joints

7 Aircraft control cables pulleys and turn buckles
7.1 Control cables
7.2 Pulleys and turnbuckles

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AIRCRAFT STRUCTURE
DAE 208

RATIONALE

Students should have knowledge of aircraft structures, as it is the structure of the aircraft that carries and takes on the weight as well as all aerodynamic loads under different engine as well as operating conditions. This gives students a board understanding and appreciation of one of the important parts of mechanics of flight.

This course gives exposure and basic knowledge of structural requirements of all lift surfaces, fuselage, landing gear and control surfaces of an aircraft. This will help students to correlate and understand the aerodynamics loads and their affects on the structures, better. This also helps students to acquire good skills in servicing and maintenance of these structures.

Students should be physically shown at least lifting and control surfaces structures along with landing gear systems sufficient practice should be given to gent students familiarized with these structures

DETAILED CONTENTS

S.No.	Theory
1.	Aircraft Structures
1.1	Introduction
2	Principal Aircraft Structures
2.1	Fuselage – Trusses, Construction, Various types
2.2	Main plane – Basic features of Construction, main parts
2.3	Empennage – Horizontal and vertical stabilizers
2.4	Primary control surfaces (Ailerons, Rudder and Elevators)
2.5	Secondary control surfaces (Flaps, Slats, spoilers and tabs)
2.6	Landing gear Turn-on, strut, drag links, and torque links, over centre link
3	Aircraft Hardware
3.1	Bolts and Nuts
3.2	Screws
3.3	Locking devices
3.4	Rivets
4.	Aircraft Structural Design
4.1	Load Factor and ultimate factor of safety
4.2	V-N diagram

4.3 Types of stresses on aircraft structures

5 Location numbering system of aircraft
5.1 Fuselage Stations
5.5 Wing stations
5.6 Butt Line stations
5.7 Aircraft Zoning

6. Aircraft fabric, cloth and wood
6.1 Aircraft fabric
6.2 Aircraft Clothes
6.3 Aircraft covering Practice
6.4 Aircraft wood & Wood Working tools
6.5 Wood joints including glue and joints

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DAE209

AIRCRAFT SYSTEMS I

RATIONAL

Diploma holders in Aeronautical Engineering and Aircraft Maintenance must have a sound knowledge of various mechanical and electrical systems which go in the airframe. This subject is designed to give them an insight into typical systems so that they understand their principles of working. This would also help them in acquiring skills in maintenance of these systems.

The course will provide basic knowledge of how the systems operate, what are the services operated in these systems, their salient features etc. Further specialization will be necessary if they have to work on any one of these systems when students are inducted in service. The students should be physically shown typical systems on the aircraft and be asked to trace various components so that they get familiarized with these systems as they are installed in the aircraft.

Sf. No.	Theory
1	Hydraulic System
1.1	Introduction to hydraulic System
1.2	Need of hydraulics. Properties of hydraulic fluids
1.3	Study of schematic diagram of typical hydraulic system
1.4	Services catered by Hydraulic system typical aircraft
1.5	Basic elements Hydraulic system -Hydraulic pump -Hydraulic Motor – Accumulator -Reservoir -Selector value, Relief valves –Jacks - Indicating devices
1.6	Introduction to landing Gear system – fixed –Retractable - W arming / Indication devices
2	Wheel and brakes system
2.1	Basic concepts of Wheel and brakes system
2.2	Types -Mechanical –Hydraulic -Pneumatic
2.3	Study of schematic diagram of typical wheel and brakes systems.
2.4	Basic elements of wheels and brakes systems
2.5	Concepts of Anti-skid systems,
2.6	Dampers
3	Introduction to Pneumatic systems
3.1	Anti-icing
3.2	Valves, regulators indicators

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DAE - 210

POWER PLANT SYSTEM - PISTON ENGINES

DETAILED CONTENTS

S. No. Theory

1. Exhaust system of various types of piston engines
2. Induction system including the carburetors, direct fuel injections, their constructions, operation and functions of parts
3. Oil system, its components and operation Requirement and purpose of oil. Factors affecting the oil consumption
4. Fuel system and its various components, their construction and operation
5. Ignition and starting systems including magneto, auxiliary starting devices and starters
6. Spark Plugs construction,

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DAE211
MAINTENANCE CONCEPT AND PRACTICES-I

RATIONALE

The subject deals with the maintenance concepts and practices in the general and as applicable to aeronautical field. The students will acquire knowledge and skill in the maintenance of aircraft and its system, organization required, controls and economics of maintenance. The teaching is to be practice oriented.

DETAILED CONTENTS

Sf. No.	Theory
1.	Maintenance
1.1	Definition
1.2	Break down maintenance
1.3	Preventive maintenance
1.4	On-time and off-time. Maintenance
2.	Organization
2.1	The maintenance manager
2.2	Organization under Maintenance Manager (Responsibilities)
3.	Economics of Maintenance
3.1	Maintenance costs and budgets
3.2	Cost control for effective operation
4.	Controls of Maintenance
4.1	Work authorization and control
4.2	Work scheduling
4.3	Documentation related to maintenance
5.	Corrosion control
5.1	Corrosion Corrosion
5.2	Corrosion preventing
6.	Chemical and abrasive cleaning
7.	Preservation, packing and storage

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DAE212
MINOR PROJECT WORK

Minor project work aims at exposing the students to industrial practices, types of repair and maintenance operations being performed and work culture in the aircraft industries. For this purpose, students during middle of course are required to be sent for a period of 4 weeks to different aircraft industries.

1. Study various machining operation
2. Study various repair and maintenance procedures being adopted in industries.
3. Learn about various methods of testing carried out on aircrafts.
4. Know about cutting parameters being used while machining different materials.
5. Study the assembly and disassembly of various aircrafts.
6. Know about various quality control techniques.

As a minor project activity, each student is supposed to study the different operation and prepare detailed project report of the processes/operation seen by him/her. These students should be guided by respective subject teachers. Each teacher may guide a group of 4-5 students.

The teacher along with person from the industries will conduct performance assessment of students. The criteria for assessment will be as follows:

	Criteria	Weight age
a)	Attendance and punctuality	15%
b)	Initiative in performing tasks/	15%
c)	Relation with people	15%
d)	Report writing	55%

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THIRD YEAR SYLLUBUS

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

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DAE 313	**Project work**	**25**	**75**	**100**
TOTAL		**325**	**975**	**1300**

DAE301
AIR CRAFTS INSTRUMENTS II

Sr. No.	Theory
1.	Gyro Instruments
2.	AC Compass
3.	Landing compass and compass .swing
4.	Alerting and indicating instruments
5.	Weather Radar
6	.AIR DATA BUS
7.	CVR, CDR and FDR
8.	Auto Pilot and Automatic Control

CODE-302

COMPUTER APPLICATIONS-II

DETAILED CONTENTS

S. No.	Theory
1.	Overview of computer Application
2.	Engineering computation and Simulation
3.	Real time measurement and control
4.	CAD/CAM/CAE
5.	Data input and retrieval for component inventory control

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DAE303

TESTING AND MEASUREMENTS

No.

1. Introduction to Methods of Measurement: mean, mode, median

1.1 Fundamental methods of measurement, general instrument terminology, Conversion of measuring unit from one system to another

1.2 Measurements and their accuracy, reliability, sensitivity and reproducibility, Calibration

1.3

1.3 Data presentation: Discrete, Histogram, Continuous

2. Analysis of experimental data: accuracy and precision

3. Measurements of following physical quantities

3.1 Displacement: Mechanical, electrical and optical systems

3.2 Force and Torque: Mechanical, elastic, electrical, fluid cell. Dynamometers

3.3 Pressure: Mechanical, Manometers, transducers, low and high pressure Measurements

3.4 Temperature: Thermo-mechanical 4 electrical calibration

3.5 Strain: Strain-gauge theory, types, calibration

3.6 Flow velocity and Flow rate: Mean velocity, pressure-probes and calibration; Orifice Nozzle, venture and Rota meters

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DAE 304

AIRCRAFT SYSTEM II

DETAILED CONTENTS

S.No. Theory

1. Air-Conditioning System
1.1 Concepts
1.2 Need of air conditioning
1.3 Study of schematic diagram of typical air-conditioning system
1.4 Basic elements of Air Conditioning system Cold air unit Heat Exchanger Pressure control valves Temperature control Valves Water extractor
1.5 Heating and ventilating Systems
Pressurisation System Concepts
Why Pressurisation? Pressurisation
Study of schematic Diagram of typical pressurization
Basic elements of pressurisation system pressure controller Discharge valve

3. Fuel System
Basic Principle
Study of schematic Diagram of a typical fuel system
Basic elements of fuel system Mechanical Booster Valves Fuel content sensors and gauging

4. Electrical system (power Generation and Distribution)

Concepts AC System (Constant and fixed speed DC System

4.2 Study of schematic Diagram of a typical AC system
4.3 Study of schematic Diagram of a typical DC system
4.4 Basic elements of AC system AC Generator Control and protection unit Indicating and Warning Devices
4.5 Basic elements of DC System DC Generator Control and Protection unit Battery

and APU External Power, GPU Indicating and warning devices

5. Miscellaneous Systems

5.1 Safety and Emergency Fire protection, detection and extinguishing Oxygen System

5.2 Escape System

5.3 Aircraft furnishing

DAE 305

MAINTENANCE CONCEPT AND PRACTICES-II

DETAILED CONTENTS

S. No.	Theory
1	General repair methods including Salvage
1.1	Welding
1.2	Patching
1.3	reviting
1.4	Gluing and plywood repair
1.5	Plating
1.6	NDT
2	Methods
2.1	Shaplayout conditions and services
2.2	Task preparation and proving
2.3	Task routine Material handling
3.	Aircraft and its Various systems
3.1	Assessing the physical condition of airframe

3.1.1 Assessment of repair as called for by maintenance manual

3.2 In-situation assessment of condition of power plant
3.2.1 Removal of engine from Airframe
3.2.2 Repair by replacement of engine and salvage its system components
4. Hydraulic System pumps, pipelines testing and repair
5. Landing Gear (LG)
5.1 Assessment of condition of various components of LG
5.2 Rectify/Replace/Repair /adjustment of LG system/its components

DAE306

ADVANCED AIRFRAME STRUCTURE-11

1. Types of Aircraft construction
1.1 Metal Construction
1.2 Wooden Construction
1.3 Composite Construction
2. Various loads taken by Aircraft during flight
2.1 Compression; Tension; Torsion; Shear; Bending
3. Construction of fuselages
3.1 Truss type fuselage
3.2 Monoco Que fuselage
3.5 Terminology for fuselage
4. Construction and method of attachment of wings
4.1 Terminology relating to wing construction
4.2 Stressed Skin construction
4.3 Braced Construction
4.3 Geodetic construction
4.4 Geodetic construction
5. Construction of Empennage
5. 1 Construction of tail plane
5.2 Construction of fin
6.Construction and method of attachment of primary surfaces
6.1 Ailerons
6.2 Elevators
6.3Rudder
6.4 Rudder vators
6.5 Elevens
7. Construction and method of attachment of of attachment of Secondary and Aircraft Aircraft
control surfaces
7.1 Tabs

7.2 Trim tabs
7.3 Balance Tabs
7.4 Servo Tabs
7.5 Spring tabs Flaps Slat-s Spoilers Airbrakes

DAE 307
ADVANCED PROPULSION-GAS TURBINE ENGINE CONSTRUCTION

RATIONALE

The diploma holder in aircraft maintenance must have required knowledge and skills about the construction and maintenance of Gas Turbine Engine. Hence this subject has been divided into two sections. The second section will be covered in the 6th semester.

DETAILED CONTENTS

GAS **TURBINE ENGINE CONSTRUCTION**

Sr. No. Theory

1. Definitions and terms used in the gas turbine engines
2. Construction and operation of various types of gas turbine engines such as turbo fan, Turbo prop and turbo shaft and comparison with reciprocating engines.
3. Factors effecting the engine performance
4. Principles of combustion
5. Gas turbine Engines: Types, Function and construction of each part, component and Accessories Classify materials
6. Compressor stall, surge and air bleed control
7. Noise suppressor, thrust reverser and auxiliary power units
8. Turbine cooling, air oil systems, flow mixing and air bleeding for secondary systems
9. Fuels and oils, contamination and prevention

SYSTEMS

10. Gas turbine engine fuel systems, including fuel control unit, other parts and components, their construction and operation
11. Lubrication systems various types of gas turbine engines, its parts and components, their Construction and operation
12. Starting system and types of gas turbine engine starters
13. Gas turbine engine thrust augmentation devices and systems such as:

water injection system, after burning system adjustable propelling nuzzled system.

DAE308

AIRCRAFT SYSTEMS III

DETAILED CONTENTS

S. No.	Theory
1.	Identification of aircraft cables, crimping and soldering techniques, bending continuity and insulation check
2.	Series and Parallel resonance and calculation of resonant frequency
3.	Handling of CRT's Weather Radar, ESD, Microprocessor
4.	Atmospheric layer around earth, radio wave propagation
5.	Communication System
5.1	VHF
5.2	HF
5.3	Interphone
5.4	Selcal
5.5	CVR
5.6	ELT
5.7	Satcom
6.	Navigation system
6.1	Direction Finding ADF VOR
6.2	Distance Measurement DME
6.3	Grid Navigation Omega System INS Doppla Navigation System, GPS
6. 4	Radar Weather Radar Radio Altimeter
6.5	Landing Aids ILS/MLS A TC Transponder A, C and S GPWS FANS

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DAE 309
MAINTENANCE CONCEPT AND PRACTICES-III

DETAILED CONTENTS

Sr	Theory
1.	Aircraft Electrical System Maintenance
1.1	Generating Systems
1.2	Electrical Distribution
1.3	Electrical component overhaul/requirements
2.	Aircraft Instrument Systems
2.1	Maintenance of measurement systems
2.2	Instrument overhaul Practice
3.	Avionics
3.1	Testing with fault Location
3.2	Overhaul requirements
4.	Environmental System
4.1	Oxygen System Condition assessment and repair/replacement
4.2	Air-conditioning System Condition assessment etc.
5.	Ejection System
6.	Pressurising System
7.	Fire detection and extinguish system
8.	Modification, their purpose and embodiment
9.	Special tasks
9.1	Standard Room
9.2	Battery Room
9.3	Cable Work

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10. Ground Handling Equipment

DAE – 310

INDUSTRIAL ENGINEERING PRACTICES

ROTIONALE :

Industrial Engineering Practices assume vital importance for a diploma holder in Aircraft Maintenance. He must appreciate the value of leadership, motivation, human relations, Total Quality.

Management and environmental Engineering. Hence this subject.

DETAILED CONTENTS

S. No. Theory

1. PRINCIPLES OF MANAGEMENT
1.1 Management, different functions of management: Planning, organizing, coordination and
control Structure of an industrial organizing,
1.2 Line, function and staff organization
1.3 Functions of different departments
1.5 Relationship between individual departments HUMAN AND INDUSTRIAL 2. RELATIONS Human relations and
2.1 performance in organization Understand self and others for
2.2 effective behavior Behaviour modification techniques
2.3 Industrial relations and disputes
2.4 Relation is with subordinates, equals and superiors
2.5 Characteristics of group behaviour and trade unionism Mob
2.6 psychology
2.7 Grievance, Handling of grievances
2.8 Agitation, Strikes, Lockouts, Picketing and Gherao Labour
2.9 welfare
2.10 Worker's participation in management MOTIVATION
2.11 Factors determining motivation
3. Characteristics of motivation
3.1 Methods for improving motivation
3.2 Incentives, pay promotion, rewards
3.3 Job satisfaction and job enrichment
3.4 LEADERSHIP
3.5 Need for leadership
4. Functions of a leader

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DAE-311
ADVANCE AIRFRAME STRUCTURE – II

1. Under Carriages

1.1 Functions of under carriage
1.2 Types of under carriage
1.3 Method of attachment of aircraft

2. Layout of Controls

2.1 Layout of primary control surfaces
2.2 Layout of Secondary control surfaces

3. Balancing of control surfaces

4. Aircraft plumbing

4.1 Metal Pipe lines
4.2 Flexible pipelines
4.3 Cutting and flaring process of pipelines
4.4 Process of Installation of pipelines
4.5 Colour coding
5. Theory of weight and balance
5.1 weighing the Aircraft
5.2 Aircraft loading

6. Aircraft rigging and symmetry checks
6.1 Leveling of Aircraft
6.2 Rigging of Aircraft laterally and longitudinally
6.3 Rigging of control surfaces
6.4 Symmetry check of aircraft
6.5 Rigging instruments and equipment

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DAE 312

DETAILED CONTENTS

ADVANCED PROPULSION-GAS TURBINE ENGINE MAINTENANCE – II

Sr. No Theory

1. Engine removal from the aircraft
   for top and complete overhaul of engine
   and its associated components crack detection
   checks, dimensional checks, repair and replacements.

2. Final Assembly and installation of engine
   on test bed. Procedure for functional and operational checks.

3. Procedure for installing the engine post installing checks

4. Engine preservation and depreservation procedure for. storage, transportation and

5. Ground running procedure of engine and various checks of engine performance

6. Snag rectification, documentation, certification in log books -Various inspection maintenance schedules, servicing and special maintenance schedules like propeller strikes. Rigging and duplicate Inspection of controls

7. Maintaining the record of oil and fuel uplift and Recording engine parameters Repair and replacements of parts and accessories

8. Engine removal and installation procedure

8. Engine starting procedure, instructions, Ground run up checks for engine performance and On condition run up of engine parameters

10. Engine maintenance, minor defects, rectification, minor repair, minor replacements and adjustments

11. Periodic inspection servicing schedules, rigging and duplicate inspection of control

12. Procedure for preservation and depreservation of engines

13. Documentation and certification

14. Procedure of maintenance schedules and log books

DAE313
MAJOR PROJECT WORK

Project work is meant for solving open ended problems by applying the knowledge and skills gained through various subject areas. It is expected that the students will be sent to various industries for about 8 weeks at a stretch and they will be asked to take live problems from the industries as project work. The projects given to the students should be such for which someone is waiting for solution. Some of the suggested project activities are given below:

i) Projects connected with repair and maintenance of machine parts of various aircrafts. Estimating and costing projects.
ii) Design of components/parts/jigs/fixtures.
iii) Projects related to increasing productivity.
iv) Project work related to quality control.

Identification of industries and problems should begin well in advance (say in the beginning of Vth Semester). Students should be asked to identify suitable industries and project activity. One teacher is expected to guide, supervise and evaluate the project work of 6 to 8 students.

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