ACHARYA INSTITUTE OF TECHNOLOGY

Affiliated to Visvesvaraya Technological University, Belagavi,
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DEPARTMENT OF AERONAUTICAL ENGINEERING

2022 SCHEME

Course Name	Course Code	CO. No.	Course Outcomes
AIRCRAFT MATERIALS AND PROCESSES(+ MANUFACTURING PROCESS LAB)	BAE301	CO1	Describe the behaviour & Stregnth of various materials used in aero industry
		CO2	Elucidate about various metal alloys and special materials used in aero industry
		CO3	Elucidate about various ferrous materials and their heat treatment processes.
		CO4	Explain various manuafacturing process of ceramics and composites
		CO5	Describe various NDT methods used to detect flaws in aero components
		CO6	Conduct various lathe operations such as turning, boring,& cutting
		CO7	Conduct various tool operations using special machines.
ELEMENTS OF AERONAUTICS	BAE302	CO1	Describe the nomenclature of aircrafts & various materials used in aviation industry
		CO2	Elucidate the basic principles of flight using & calculate various forces acting on it.
		CO3	Explain various power plants used in aviation industry
		CO4	Analyze various parameters related to performance & stability of aircraft.
		CO5	Illustrate various Electro-Mechanical Systems used in aircraft.
FLUID MECHANICS	BAE303/BAS303	CO1	Describe the concepts of fluid mechanics to solve the problems related to fluid statics
		CO2	Evaluate the problems related to fluid in motion and kinematics by using governing principles
		CO3	Infer the fluid dynamics across various scales and conditions using the principles of similarity and dimensional analysis
		CO4	Estimate the behavior of fluid flow around immersed bodies by using various theory of fluid dynamics
		CO5	Determine the behavior of compressible flow fluids using governing equations
		CO6	Evaluate the effects of fluid properties and measure flow rates using various techniques
		CO7	Determine the different flows of fluid and its losses
MECHANICS OF	BAE304	CO1	Eluicidate the concept of stress and strains to calculate simple & compound stress.

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MATERIALS		CO2	Evaluate Shear force, bending moment & stress for varios cross section of beams.
		CO3	Calculate deflection, torsion and elasrtic stability of various structural memebers
		CO4	Apply concepts of virtual work & energy to linear elastic structural components
		CO5	Decribe various types of fracture and fatique occurs in materials.
COMPUTER AIDED AIRCRAFT DRAWING	BAEL305/BASL305	CO1	Understand the design/assembly drawings.
		CO2	Familiarize yourself with the tools in the standard CAD package.
		CO3	Draw orthographic projections and sectional views of standard primitives, thread forms, joints and couplings and Machine components
		CO4	Model parts and assembly of aircraft components.
DIGITALIZATION IN AERONAUTICS	BAE358C	CO1	Describe wide variety of digital applications utilised in aviation research.
		CO2	Elucidate the digitalization in collaborative design
		CO3	Describe the Implementation of digitalization in MRO
		CO4	Explain the productivity enhancement through digital models.
		CO5	Explain paremanetric model reduction for structural analysis
AERO ENGINEERING THERMODYNAMICS	BAE401	CO1	Elucidate the fundamental concepts of thermodynamics.
		CO2	Apply first law of thermodynamics to various processes
		CO3	Apply Second law of thermodynamics to various processes
		CO4	Analyze the concept of thermodynamic relation using air standard cycle diagrams
		CO5	Evaluate efficiency of various gas & vapour power cycles
AERODYNAMICS (+ AERODYNAMICS LAB)	BAE401	CO1	Describe the fundamental of incompressible flow over a airfoil
		CO2	Describe the fundamental of incompressible flow over finite wing
		CO3	Calculate aerodynamic parameters using finite wing theory
		CO4	Elucidate the Basics of compressible flow
		CO5	Evaluate the various phenomenon of compressible flow
		CO6	Calculate the characteristics of incompressible flow using flow visualization.
		CO7	Calculate the aerodynamic characteristics of various models.

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AIRCRAFT PROPULSION	BAE403	CO1	Describe the basic principles of aircraft propulsion systems.
		CO2	Compute the peformance paramenters of various gas turbine engines.
		CO3	Analyze the performance of inlets & nozzle
		CO4	Elucidate the functions of various gas turbine compressors
		CO5	Analyze the performance of combustion chamber & turbines
		CO6	Describe funtionality of piston and jet engine parts
		CO7	Evaluate parameters related to heat transfer, flow through nozzles & inlets through experimentations.
DRONE PILOT TRAINING	BAE456B/ BAS456B	CO1	Decribe Rules and regulation of DGCA & ATC
		CO2	Describe aerodynamics of fixed & rotor wing aircrafts
		CO3	Elcuidate various maintainance & emergency handling techniques related to drone
		CO4	Explain vital avionics components of drone
		CO5	Describe various virtual simulation environments and conditions to fly the drone
ADDITIVE MANUFACTURING (3D PRINTING)	BAE405A	CO1	Describe the the fundamental principles and technological advancements in Additive Manufacturing (AM)
		CO2	Illustrate various additive manufacturing techniques.
		CO3	Elucidate the various printing and beam deposition processes
		CO4	Describe various techniques in additive manufacturing to formulate comprehensive production strategies.
		CO5	Articulate various techniques and commercial applications of additive manufacturing
FLUID MECHANICS	BAE303/BAS303	CO1	Describe the concepts of fluid mechanics to solve the problems related to fluid statics
		CO2	Evaluate the problems related to fluid in motion and kinematics by using governing principles
		CO3	Infer the fluid dynamics across various scales and conditions using the principles of similarity and dimensional analysis
		CO4	Estimate the behavior of fluid flow around immersed bodies by using various theory of fluid dynamics
		CO5	Determine the behavior of compressible flow fluids using governing equations
		CO6	Evaluate the effects of fluid properties and measure flow rates using various techniques
		CO7	Determine the different flows of fluid and its losses
MECHANICS OF MATERIALS	BAE304	CO1	Eluicidate the concept of stress and strains to calculate simple & compound stress.
		CO2	Evaluate Shear force, bending moment & stress for

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			varios cross section of beams.
		CO3	Calculate deflection, torsion and elasrtic stability of various structural memebers
		CO4	Apply concepts of virtual work & energy to linear elastic structural components
		CO5	Decribe various types of fracture and fatique occurs in materials.
COMPUTER AIDED AIRCRAFT DRAWING	BAEL305/B ASL305	CO1	Understand the design/assembly drawings.
		CO2	Familiarize yourself with the tools in the standard CAD package.
		CO3	Draw orthographic projections and sectional views of standard primitives, thread forms, joints and couplings and Machine components
		CO4	Model parts and assembly of aircraft components.
DIGITALIZATION IN AERONAUTICS	BAE358C	CO1	Describe wide variety of digital applications utilised in aviation research.
		CO2	Elucidate the digitalization in collaborative design
		CO3	Describe the Implementation of digitalization in MRO
		CO4	Explain the productivity enhancement through digital models.
		CO5	Explain paremanetric model reduction for structural analysis
AERO ENGINEERING THERMODYNAMICS	BAE401	CO1	Elucidate the fundamental concepts of thermodynamics.
		CO2	Apply first law of thermodynamics to various processes
		CO3	Apply Second law of thermodynamics to various processes
		CO4	Analyze the concept of thermodynamic relation using air standard cycle diagrams
		CO5	Evaluate efficiency of various gas & vapour power cycles
AERODYNAMICS (+ AERODYNAMICS LAB)	BAE401	CO1	Describe the fundamental of incompressible flow over a airfoil
		CO2	Describe the fundamental of incompressible flow over finite wing
		CO3	Calculate aerodynamic parameters using finite wing theory
		CO4	Elucidate the Basics of compressible flow
		CO5	Evaluate the various phenomenon of compressible flow
		CO6	Calculate the characteristics of incompressible flow using flow visualization.
		CO7	Calculate the aerodynamic characteristics of various models.
AIRCRAFT	BAE403	CO1	Describe the basic principles of aircraft propulsion

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PROPULSION			systems.
		CO2	Compute the peformance paramenters of various gas turbine engines.
		CO3	Analyze the performance of inlets & nozzle
		CO4	Elucidate the functions of various gas turbine compressors
		CO5	Analyze the performance of combustion chamber & turbines
		CO6	Describe funtionality of piston and jet engine parts
		CO7	Evaluate parameters related to heat transfer, flow through nozzles & inlets through experimentations.
DRONE PILOT TRAINING	BAE456B/ BAS456B	CO1	Decribe Rules and regulation of DGCA & ATC
		CO2	Describe aerodynamics of fixed & rotor wing aircrafts
		CO3	Elcuidate various maintainance & emergency handling techniques related to drone
		CO4	Explain vital avionics components of drone
		CO5	Describe various virtual simulation environments and conditions to fly the drone
ADDITIVE MANUFACTURING (3D PRINTING)	BAE405A	CO1	Describe the the fundamental principles and technological advancements in Additive Manufacturing (AM)
		CO2	Illustrate various additive manufacturing techniques.
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		CO4	Describe various techniques in additive manufacturing to formulate comprehensive production strategies.
		CO5	Articulate various techniques and commercial applications of additive manufacturing

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2021 SCHEME

Course Name	Course Code	CO. No.	Course Outcomes
TRANSFORM CALCULUS, FOURIER SERIES & NUMERICAL TECHNIQUES (COMMON TO ALL)	21MAT31	CO1	Understand The Concepts Of Laplace Transforms, Fourier Series, Fourier Transforms, Z-Transforms, Numerical Techniques And Calculus Of Variations
		CO2	Demonstrate Various Physical Phenomena Using The Concepts Of Laplace Transforms,Fourier Series, Fourier Transforms, Z-Transforms, Numerical Techniques And Calculus Of Variations
		CO3	Apply The Knowledge Of Laplace Transforms, Fourier Series, Fourier Transforms, Z-Transforms, Numerical Techniques And Calculus Of Variations In Modeling Various Physical And Engineering Phenomena.
		CO4	Relate The Concepts Of Laplace Transforms, Fourier Series, Fourier Transforms, Z-Transforms, Numerical Techniques And Calculus Of Variations To Their Respective Branches.
AIRCRAFT MATERIALS AND PROCESSES(+MANUFACTURING PROCESS LAB)	IPCC 21AE32	CO1	Describe the behaviour & Stregnth of various materials used in aero industry
		CO2	Elucidate about various metal alloys and special materials used in aero industry
		CO3	Elucidate about various ferrous materials and their heat treatment processes.
		CO4	Explain various manuafacturing process of ceramics and composites
		CO5	Describe various NDT methods used to detect flaws in aero components
		CO6	Conduct various lathe operations such as turning, boring,& cutting
		CO7	Conduct various tool operations using special machines.
FLUID MECHANICS	IPCC 21AE33	CO1	Describe the concepts of fluid mechanics to solve the problems related to fluid statics
		CO2	Evaluate the problems related to fluid in motion and kinematics by using governing principles
		CO3	Infer the fluid dynamics across various scales and conditions using the principles of similarity and dimensional analysis
		CO4	Estimate the behavior of fluid flow around immersed bodies by using various theory of fluid dynamics
		CO5	Determine the behavior of compressible flow fluids using governing equations
		CO6	Evaluate the effects of fluid properties and measure flow rates using various techniques
		CO7	Determine the different flows of fluid and its losses

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Subject	Code	CO	Description
ELEMENTS OF AERONAUTICS	PCC 21AE34	CO1	Describe the nomenclature of aircrafts & various materials used in aviation industry
		CO2	Elucidate the basic principles of flight using & calculate various forces acting on it.
		CO3	Explain various power plants used in aviation industry
		CO4	Analyze various parameters related to performance & stability of aircraft.
		CO5	Illustrate various Electro-Mechanical Systems used in aircraft.
COMPUTER AIDED AIRCRAFT DRAWING	PCC 21AEL35	CO1	Understand the design/assembly drawings.
		CO2	Familiarize yourself with the tools in the standard CAD package.
		CO3	Draw orthographic projections and sectional views of standard primitives, thread forms, joints and couplings and Machine components
		CO4	Model parts and assembly of aircraft components.
DIGITALIZATION IN AERONAUTICS	21AE383	CO1	Describe wide variety of digital applications utilised in aviation research.
		CO2	Elucidate the digitalization in collaborative design
		CO3	Describe the Implementation of digitalization in MRO
		CO4	Explain the productivity enhancement through digital models.
		CO5	Explain paremanetric model reduction for structural analysis
AERODYNAMICS (+ AERODYNAMICS LAB)	IPCC 21AE42	CO1	Describe the fundamental of incompressible flow over a airfoil
		CO2	Describe the fundamental of incompressible flow over finite wing
		CO3	Calculate aerodynamic parameters using finite wing theory
		CO4	Elucidate the Basics of compressible flow
		CO5	Evaluate the various phenomenon of compressible flow
		CO6	Calculate the characteristics of incompressible flow using flow visualization.
		CO7	Calculate the aerodynamic characteristics of various models.
AERO ENGINEERING THERMODYNAMICS	IPCC 21AE43	CO1	Elucidate the fundamental concepts of thermodynamics.
		CO2	Apply first law of thermodynamics to various processes
		CO3	Apply Second law of thermodynamics to various processes
		CO4	Analyze the concept of thermodynamic relation using air standard cycle diagrams
		CO5	Evaluate efficiency of various gas & vapour power cycles
		CO6	Calculate various properties of fuels to analyze performance of four stroke & multi cylinder engines

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		CO7	Evaluate various paraemeters related to heat transfer co effcients under free & forced conventions
MECHANICS OF MATERIALS	PCC 21AE44	CO1	Eluicidate the concept of stress and strains to calculate simple & compound stress.
		CO2	Evaluate Shear force, bending moment & stress for varios cross section of beams.
		CO3	Calculate deflection, torsion and elasrtic stability of various structural memebers
		CO4	Apply concepts of virtual work & energy to linear elastic structural components
		CO5	Decribe various types of fracture and fatique occurs in materials.
HYDRAULICS & PHEUMATICS SYSTEM LAB	PCC 21AEL46	CO1	Understand the operating principles and constructional features of hydraulic and pneumatic systems.
		CO2	Demonstrate the knowledge of hydraulic / pneumatic for the selection of components.
		CO3	Conduct the experiments and tabulated the reading.
		CO4	Interpret and conclude the result both orally and written.
FLUID MECHANICS- THE BASICS	21AE483	CO1	Elucidate anatomy of Aircraft
		CO2	Explain various terminology used in aircrafts
		CO3	Calculate basic performane parameters of flight
		CO4	Explain the concept of positioning aerodynamics forces.
		CO5	Describe the basic components of fixed,rotary wing aircraft's & space flight
MECHANISM & MACHINE THEORY	BSC 21AE51	CO1	Elucidate various links, Joints and different mechanisms.
		CO2	Apply graphical methods to static force analysis of mechanisms
		CO3	Calculate the various paraemeters involved in desiging spur & gear trains
		CO4	Analyze the balancing of rotating & reciprocating masses
		CO5	Applyconcepts of governers & gyroscopes to mechanial systems
AIRCRAFT PROPULSION	IPCC 21AE52	CO1	Describe the basic principles of aircraft propulsion systems.
		CO2	Compute the peformance paramenters of various gas turbine engines.
		CO3	Analyze the performance of inlets & nozzle
		CO4	Elucidate the functions of various gas turbine compressors
		CO5	Analyze the performance of combustion chamber & turbines
		CO6	Describe funtionality of piston and jet engine parts
		CO7	Evaluate parameters related to heat transfer, flow

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				through nozzles & inlets through experimentations.
AERO STRUCTURES	PCC 21AE53	CO1		Elucidate failure theories & Calculate various types of stress
		CO2		Calculate fatigue and impact strength of aircraft components.
		CO3		Describe various materials used in aero industry &analyze various load acting on aircrafts during maneuvers
		CO4		Analyze simple and complex structures by applying concepts like stress, strain, equilibrium, and compatibility conditions,
		CO5		Determine deformation and stability of structures by applying principles of Energy methods & column failure theories
AIRCRAFT PERFORMANCE AND STABILITY	PCC 21AE54	CO1		Describe the basics of steady level flight and calculate its performance parameters
		CO2		Evaluate various performance parameters of aircrafts including range & endurance
		CO3		Analyze performance of accelerated flights.
		CO4		Analyze the static longitudinal stability and control of aircraft with stick-fixed configurations
		CO5		Analyze directional &; lateral stability on aircraft,including the effects of various components & adverse weather conditions in design of flightvehicles.
ADVANCED AIRCRAFT STRUCTURES LAB	PCC 21AEL55	CO1		Apply the concept of deflection to beam ubder various boundary condigtions to verify theoritically
		CO2		Calculate the mechanical properties through experiments
		CO3		Evaluate the strength of permanents & temporary joints used in aircrafts assembly
		CO4		Analyze the vibration of simple beams and corelate with aircraft wings
		CO5		Interpret and conclude the result both orally and written.
RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS	AEC 21AE56	CO1		Explain complex research problems, with a comprehensive understanding of the objectives, significance, and challenges of conducting research, particularly in the Indian context.
		CO2		Elucidate the research problem using the existing literature survey to construct both theoretical and conceptual frameworks .
		CO3		Apply various sampling techniques & utilize appropriate measurement scales, and select the most suitable data collection methods for both primary and secondary data.
		CO4		Apply various statistical hypothesis testing techniques to interpret results and assess the power and limitations of these tests in practical scenarios.

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		CO5	Analyze and interpret research findings, effectively write and present comprehensive research reports to understand the framework of IPR.
DRONE PILOT TRAINING	21AE581	CO1	Decribe Rules and regulation of DGCA & ATC
		CO2	Describe aerodynamics of fixed & rotor wing aircrafts
		CO3	Elcuidate various maintainance & emergency handling techniques related to drone
		CO4	Explain vital avionics components of drone
		CO5	Describe various virtual simulation environments and conditions to fly the drone
AVIATION MANAGEMENT	HSMC 21AE61	CO1	Describe airline operations, scheduling, and regulatory frameworks, enabling them to optimize decision-making in modern aviation businesses.
		CO2	Describe skills in managing human resources, understanding organizational behaviour to enhance airline economics and customer relationship management.
		CO3	Elucidate strategic management and total quality management practices, and manage aircraft maintenance and supply chains effectively.
		CO4	Explain effective communication, and research methods, essential for managing the integrated aviation value chain in a global context.
		CO5	Describe aviation law, safety management, accident investigations, and emerging management trends to promote entrepreneurship and strategic airline marketing.
AIRCRAFT SYSTEMS AND AVIONICS (+ AVIONICS LAB)	IPCC 21AE62	CO1	Describe various conventional systems used in aircrafts
		CO2	Elucidate vital modern controlsystems used in aircraft
		CO3	Illustrate the working principle of various vital instruments used in aircrafts
		CO4	Explain various type of power disribution systems used in aircraft industry.
		CO5	Illustrate various display system & data busses used in aircrafts
		CO6	Evaluate measurements on fdifferent instruments used in flight operation &use microprocessor to perform A/D Conversions
		CO7	Interpret and conclude the result both orally and written.
GAS TURBINE TECHNOLOGY	PCC 21AE63	CO1	Describe various components of aircraft engines
		CO2	Elucidate various materials used in components of aircraft engine.
		CO3	Evaluate the performance parameters of engines from given data sets
		CO4	Evaluate the performance parameters of Compressor, turbines, Inlets & Outlets

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		CO5	Explain various engine testing methods
COMPOSITE MATERIALS & STRUCTURES	PEC 21AE642	CO1	Explain artificial & natural composites, it's application various engineering fields
		CO2	Describe various types of composites materials
		CO3	Illustrate various composites fabrication techniques
		CO4	Calculate the mechanical properties laminates
		CO5	Evaluate the free vibration & buckling of composite structures
INTRODUCTION TO AEROSPACE HISTORY	OEC 21AE651	CO1	Explain milestones in aerospace history, from early flight to modern aircraft development
		CO2	Describe vfundamental principles of aerodynamics, including the behavior of flowing gases and the forces acting on an aircraft.
		CO3	Elucidate fundamentals of thermodynamics and viscous flow and how they apply to the design and performance of airfoils and wings.
		CO4	Analyze the performance of airplanes, including calculating rates of climb, range, and endurance for both propeller-driven and jet aircraft.
		CO5	Desribe the principles of flight stability and control, including the evolution of flight control systems and the basics of jet propulsion.
FLIGHT MODELLING, ANALYSIS AND SIMULATION LAB	PCC 21AEL66	CO1	Describe the proceedure to develop algorithms, draw the geometric models of various aircraft components
		CO2	Design various aircraft structural components
		CO3	Develop algorithms to evaluate performance parameters
		CO4	Analyze the developed algorithms & the geometric models using various boundary conditions
		CO5	Interpret the concepts & results both orally & written.

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2018 SCHEME COURSE OUTCOMES

Course Name	Course Code	CO. No.	Course Outcomes
TRANFORM CALCULUS, FOURIER SERIES & NUMERICAL TECHNIQUES	18MAT31	CO1	Have The Knowledge Of Laplace Transforms, Fourier Series, Fourier Transforms, Z-Transforms, Calculus Of Variations And Numerical Methods.
		CO2	Solve Engineering Problems Using Laplace Transforms, Fourier Series, Fourier Transforms, Numerical Methods And Calculus Of Variation.
		CO3	Communicate And Reflect On Applications Of Mathematics As Tool.
AERO THERMODYNAMICS	18AE32/18AS32	CO1	Apply The Concepts And Definitions Of Thermodynamics.
		CO2	Differentiate And Understanding The Concept Of Thermodynamic Work And Heat
		CO3	Apply I Law And II Law Of Thermodynamics To Different Process.
		CO4	Apply The Principles Of Various Thermodynamic Gas Cycles
MECHANICS OF MATERIALS	18AE33/18AS33	CO1	Understand Elastic Properties Of Materials, Different Types Of Stress Due To Application Of Loads And Energy Stored In Various Structural Members
		CO2	Compute The Relation For Stress And Strain Distribution, Shear Force And Bending Moment Diagram
		CO3	Apply The Loads For Torque And Stability Of Columns
		CO4	Analyze The Stresses, Strains And Strain Energy In Bars, Cylinders, Beams.
ELEMENTS OF AERONAUTICS	18AE34	CO1	Describe The Basic Principles Of Aviation & Aircraft Systems.
		CO2	Discuss The Basics Of Aircraft Structures, Materials, And Concepts Of Aircraft Propulsion.
		CO3	Determine The Performance Parameters In The Design Of Flight Vehicles.
		CO4	Analyze The Stability And Control Of Flight Vehicle.
FLUID MECHANICS	18AE35/18AS35	CO1	Discuss The Fluid Pressure And Use Various Devices For Measuring Fluid Pressure
		CO2	Understand The Hydrostatic Force And Use The Law Of Conservation Of Mass To Fluid Flow.
		CO3	Apply Bernoulli's Equation To Fluid Flow Problems And Boundary Layer Theory To Determine Lift And Drag Forces On A Submerged Body.
		CO4	Apply Appropriate Equations And Principles To Analyze Flow Problems.
MEASURMENT	18AE36	CO1	Explain The Basics Of Standards Of Measurement,

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AND METROLOGY			Limits, Fits & Tolerances And Uses Of Gauging.
		CO2	Understand The Significance Of Measurement System, Errors, Transducers, Intermediate Modifying And Terminating Devices
		CO3	Interpret Measurement Of Field Variables Like Force, Torque And Pressure
		CO4	Comprehend The Fundamentals Of Thermocouple And Strain Measurement
MEASUREMENTS AND METROLOGY LAB	18AEL37A\ 18AEL37B	CO1	Explain The Principle Of Measuring Tools Related To Experiments.
		CO2	Understand The Accuracy, Precision, And Some Additional Terminology.
		CO3	Interpret And Present Measurement Data From Measurements Experiments.
		CO4	Examine And Compare The Experimental Results.
MACHINESHOP LAB	18AEL38	CO1	Understand The Machining Processes And Tools
		CO2	Demonstrate The Operation Of General-Purpose Machine Tools And Manufacturing Process
		CO3	Identify The Special Purpose Machine Tools For Specific Requirements
		CO4	Develop Physical Models Using Different Manufacturing Processes.
COMPLEX ANALYSIS, PROBABILITY AND SAMPLING DISTRIBUTIONS.	18MAT41	CO1	Have The Knowledge Of Statistical Methods Complex Variables, Probability And Sampling Theory.
		CO2	Compute The Solutions Using Complex Variables, Statistical Methods And Probability And Sampling Theory.
		CO3	Interpret The Solutions Using Complex Variables, Statistical Methods And Probability And Sampling Theory.
UNDERSTAND THE BASICS OF FLUID MECHANICS	18AE42/18 AS42	CO1	Understand The Basics Of Fluid Mechanics
		CO2	Evaluate Typical Airfoil Characteristics And Two-Dimensional Flows Over Airfoil
		CO3	Compute And Analyse The Incompressible Flow Over Finite Wings
		CO4	Apply Finite Wing Theory And Design High Lift Systems From The Aerodynamics View Point
AIRCRAFT PROPULSION	18AE43	CO1	Understand The Concept Of Basics Of Thermodynamics
		CO2	Explain The Functions Of Centrifugal, Axial Compressors, Axial And Radial Turbines
		CO3	Analyse The Performance Of Nozzles & Inlets And Combustion Chamber.
		CO4	Apply The Basic Principle And Theory Of Aircraft Propulsion.
MECHANISMS AND MACHINE	18AE44/18 AS44	CO1	Understand The Basics Of Mechanisms.
		CO2	Explain The Concepts Of Velocity, Acceleration And

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THEORY			Static Force Analysis To Design Of Mechanisms.
		CO3	Interpret Spur Gears, Gear Train, Balancing Of Rotating And Reciprocating Masses.
		CO4	Comprehend The Governors And Gyroscope
AIRCRAFT MATERIAL SCIENCE	18AE45	CO1	Identify Appropriate Aircraft Materials For A Given Application
		CO2	Comprehend Composite Materials And Polymer Usage In Aerospace Applications.
		CO3	Explain The Properties Of Super Alloys, Ablative Materials And High Energy Material
		CO4	Understand Material Corrosion Process And Apply Prevention Technique
TURBOMACHINES	18AE46	CO1	Acquire The Knowledge On Basics Of Turbomachines And The Energy Transformation During Different Processes.
		CO2	Derive The Governing Equations For Different Processes In Turbomachines.
		CO3	Solve For Different Design Parameters In Turbomachines.
		CO4	Analyze The Design Of Turbomachine Blades.
MATERIAL TESTING LAB	18AEL47A/ 18AEL47B	CO1	Understand The Different Material Properties, Heat Treatment Processes And Microstructures Of The Materials.
		CO2	Perform Destructive And Non-Destructive Test On Materials To Find Different Strengths And Characteristics Of Materials.
		CO3	Tabulate The Readings And Interpret The Results Graphically/Mathematically
COMPUTER AIDED AIRCRAFT DRAWING	18AEL48/18ASL48	CO1	Understand The Design/Assembly Drawings.
		CO2	Familiarize Yourself With The Tools In The Standard CAD Package.
		CO3	Draw Orthographic Projections And Sectional Views Of Standard Primitives, Thread Forms, Joints And Couplings And Machine Components
		CO4	Model Parts And Assembly Of Aircraft Components.
MANAGEMENT AND ENTREPRENEURSHIP	18AE51/ 18AS51	CO1	Understand The Foundation Of Management And Planning.
		CO2	Comprehend The Concept Of Planning,Organising,Staffing,Directing And Controlling In A Mangement Cycle.
		CO3	Distinguish Entrepreneur,Intrapreneur And Responsibilities Of Organisations Towards Society.
		CO4	Describe The Process Of Setting Up Small-Scale Industries.
AERODYNAMICS - II	18AE52/18 AS52	CO1	Discuss The Concepts Of Compressible Flow In One Dimension

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		CO2	Apply Knowledge Of Oblique And Normal Shock
		CO3	Solve The Differential Equation For Steady Compressible Flow
		CO4	Illustrate The Method Of Measuring The Parameters In High Speed Flow
AIRCRAFT STRUCTURES-I	18AE53	CO1	Describe The Basic Concepts Of Stress, Strain, Load, Static Strength, Impact And Fatigue Strength.
		CO2	Categorize The Appropriate Materials For Suitable Application Based On Properties.
		CO3	Deduce The Governing Equations For Different Loading Conditions.
		CO4	Solve For The Parameters In Different Aircraft Structural Components.
INTRODUCTION TO COMPOSITES	18AE54	CO1	Explain The Advantages Of Using Composite Materials As An Alternative To Coventional Materials For Specific Applications
		CO2	Describe The Advanced Fabrication And Processing For Producing Composite Parts
		CO3	Evaluate The Micro- And Macro-Mechanical Behaviour Of Composite Laminates
		CO4	Conduct The Test For The Composite Materials And Check The Quality Of Composites
AIRCRAFT SYSTEM AND INSTRUMENTA TION	18AE55/18 AS55	CO1	Distinguish The Conventional And Modern Control Systems.
		CO2	Classify The Aircraft Systems
		CO3	Categorize Different Types Of Aircraft Instruments
		CO4	Identify The Conventional And Modern Control Systems.
THEORY OF VIBRATIONS	18AE56	CO1	Apply The Principle Of Super Position To Simple Harmonic Motions
		CO2	Differentiate The Free And Forced Vibrations With Dampers
		CO3	Determine The Vibrations Using Vibration Instruments
		CO4	Analyze The Multi-Degree Freedom Systems.
AERODYNAMICS LAB	18AEL57/1 8ASL57	CO1	Understand Different Types Of Wind Tunnel And Calibrate The Test Section Speed Of The Wind Tunnel.
		CO2	Illustrate The Stream Patterns Over Bluff And Slender Bodies.
		CO3	Investigate The Variation Of Surface Pressure Over Bluff And Slender Bodies.
		CO4	Predict The Lift And Drag Co Efficient Over An Airplane Model.
ENERGY CONVERSION AND FLUID MECHANICS	18AEL58	CO1	Understand The Basic Physics Of Fluids
		CO2	Demonstrate The Ability To Find The Performance Parameters / Properties
		CO3	Conduct The Experiment And Tabulate The Readings

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LAB		CO4	Interpret And Conclude The Result Both Orally And Written
AIRCRAFT PERFORMACE	18AE61	CO1	Differentiate The Aircraft Performance In Steady Unaccelerated And Accelerated Flight.
		CO2	Explain The Aircraft Maneuver Performance.
		CO3	Categorize The Aircraft Performance In Steady Accelerated And Accelerated Flight.
		CO4	Apply The Basic Airplane Performance Parameters.
AIRCRAFT STRUCTURES-II	18AE62	CO1	Apply The Concepts Of Thin Walled Structures In Bending And Shear Flow
		CO2	Predict The Failure Of Plate, Bolt And Rivets
		CO3	Identify The Structural Failures And Its Assessment Procedures Applicable To Aircraft Structures
		CO4	Evaluate The Stress In Wings And Fuselage Frames.
FINITE ELEMENT METHODS	18AE63/18 AS63	CO1	Apply Discretization Technique For Domain Decomposition
		CO2	Derive The Shape Functions For Various FE Elements
		CO3	Evaluate The Effects Of Different Loading And Boundary Conditions
		CO4	Analyze The Governing Equations Of Finite Element Analysis
GAS TURBINE TECHNOLOGY	18 AE 644	CO1	Describe The Various Types And Components Of Gas Turbine Engine
		CO2	Discuss The Materials And Manufacturing Technics Used In Gas Turbine Engine And Their Applications
		CO3	Interpret The Performance Parameters Of Gas Turbine Engine
		CO4	Analyze The Gas Turbine Engine Using Different Testing Methods
AIRCRAFT PROPULSION LAB	18AEL66	CO1	Understand The Basic Principle Of Aircraft Propulsion And Heat Transfer.
		CO2	Demonstrate The Ability To Measure The Flame And Behavior Of Flow Through Nozzle / Ducts.
		CO3	Conduct The Experiment And Tabulate The Readings
		CO4	Interpret And Conclude The Result Both Orally And Written
MACHINE SHOP LAB	18AEL67	CO1	Understand And Determine The Young's Modulus For Materials Using Strain Gauge And Extensometer And Their Deflections For Various Loading Conditions.
		CO2	Investigate The Maxwell's Reciprocal Theorem And Principle Of Superposition Using Beams Under Various Load Conditions.
		CO3	Compare The Theoretical And Experimental Results Of Beams And Columns With Various End Conditions.
		CO4	Analyze And Interpret The Theoretical And Experimental Results For Beams And Columns..

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MINI PROJECT	18AEMP68	CO1	Demonstrate An Ability To Identify And Formulate A Hypothesis For A Chosen Problem And To Test Through Appropriate Experiments
		CO2	Apply Relevant Modern Tools/Techniques To Solve The Chosen Problem.
		CO3	Analyse/Infer/Evaluate The Experimental Results And Propose Suitable Modifications To Improve Performance.
		CO4	Work Effectively As A Member Or A Leader Of A Team.
		CO5	Communicate Effectively Through Written Report And Oral Presentations.
AIRCRAFT STABILITY & CONTROL	18AE71	CO1	Understand The Concept Of Aircraft Static Stability And The Role Of Control System In Longitudinal Stability
		CO2	Illustrate The Mathematical Modeling Of An Aircraft In Static Longitudinal Phase For Both Stick Fixed And Stick Free Conditions
		CO3	Demonstrate The Longitudinal And Directional Parameters With The Help Of The Linearized Equations Of Aircraft Motion
		CO4	Analyze The Lateral And Directional Dynamics With The Help Of Derivatives
COMPUTATIONAL FLUID DYNAMICS	18 AE 72	CO1	Understand The Basic Principles Of Computational Fluid Dynamics.
		CO2	Develop The Governing Flow Equations Such As Continuity, Momentum And Energy Equations.
		CO3	Compute The Types Of Physical Flow Based On Partial Differential Equations.
		CO4	Utilize The Methods Of Discretization To Compute Flow Variables For Various Problems
MODELLING AND ANALYSIS LAB	18 AE L76	CO1	Understand The Design Drawings.
		CO2	Design The Component/Parts Effectively Using The CAE Tools
		CO3	Interpret The Concepts And Results Both Orally And Written
FLIGHT SIMULATION LABORATORY	18 AE L77	CO1	Write Program To Simulate Concepts Of Flight Mechanics (Control Systems, Aircraft Performance, Aircraft Stability And Control).
		CO2	Simulate/Implement Discrete Computations On Systems And Verify Its Properties
		CO3	Interpret The Simulation Result And Plots Both Orally And Written.
		CO4	Gain Experience In The Application Of MATLAB To Real Engineering Designs.
FLIGHT	18 AE L76	CO1	Demonstrate An Ability To Identify And Formulate A

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SIMULATION LABORATORY			Hypothesis For A Chosen Problem And To Test Through Appropriate Experiments.
		CO2	Apply Relevant Modern Tools/Techniques To Solve The Chosen Problem.
		CO3	Analyse/Infer/Evaluate The Experimental Results And Propose Suitable Modifications To Improve Performance.
		CO4	Work Effectively As A Member Or A Leader Of A Team.
		CO1	Communicate Effectively Through Written Report And Oral Presentations.
FLIGHT VEHICLE DESIGN	18AE81	CO1	Estimate The Thrust Loading And Wing Loading For The Preliminary Designing Of The Complete Aircraft As Per The Given Requirements
		CO2	Interpret The Configuration And Loft Design Process Of Fuselage, Wing And Tail Components
		CO3	Compute The Flight Vehicle Stability And Performance.
		CO4	Analyze The Design Aspects Of All Sub Systems
AVIONICS	18AE821	CO1	Understand The Basic Concepts Of Avionics Systems In Civil And Military Aircrafts
		CO2	Interpret The Working Of Various Avionics System In An Aircraft
		CO3	Decribe The Navigation Systems.
		CO4	Distinguish The Avionics System Architecture.
PROJECT WORK PHASE - 2	18AEP83	CO1	Demonstrate An Ability To Identify And Formulate A Hypothesis For A Chosen Problem And To Test Through Appropriate Experiments.
		CO2	Apply Relevant Modern Tools/Techniques To Solve The Chosen Problem.
		CO3	Analyse/Infer/Evaluate The Experimental Results And Propose Suitable Modifications To Improve Performance.
		CO4	Work Effectively As A Member Or A Leader Of A Team.
		CO1	Communicate Effectively Through Written Report And Oral Presentations.
TECHNICAL SEMINAR	18 AE S84	CO1	Select Recent Advances In A Specific Technical Field By Performing A Comprehensive Literature Survey.
		CO2	Compare The Different Solution Methods, Various Software Tools And Methods For The Identified Problem.
		CO3	Discuss The Advantages And Disadvantages Of Approach, Along With Possible Future Directions.
		CO4	Communicate Technical Content Effectively Through Written And Oral Presentations.
INTERNSHIP	18AEI85	CO1	Demonstrate The Sound Knowledge In The Chosen

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			Domain Through Skill Up Gradation.
		CO2	Correlate The Knowledge Gained For Different Application Scenarios.
		CO3	Work As Individual Or As Good Team Player In An Organisation.
		CO4	Communicate Technical Content Effectively Through Written And Oral Presentations.
CONTROL ENGINEERING	18AE732	CO1	Understand The Concepts Of Control Systems
		CO2	Develop Mathematicalmodels And Governing Equations For Various Physical Models.
		CO3	Intepret The Block Diagrams And Signal Flow Graphs To Compute Transfer Functions.
		CO4	Analyze The Problems Due To Heat Transfer In Several Areas
WIND TUNNEL TECHNIQUES	18AE742/18AS742	CO1	Understand The Basic Principles And Procedures For Model Testing In The Wind Tunnel
		CO2	Classify The Various Types Of Wind Tunnels And Its Functions
		CO3	Interpret The Conventional Measurement Techniques And Special Wind Tunnel Techniques
		CO4	Use The Special Wind Tunnel Techniques
GUIDANCE NAVIGATION & CONTROL	18AE743/18AS743	CO1	Understand The Basic Navigation, Guidance & Control System Concepts Of Aircraft And Missile
		CO2	Discuss About The Types Of Radar And Tracking Systems.
		CO3	Evaluate The Performance Parameters Of GN&C Systems.
		CO4	Analyze The GN&C Systems Of Aircrafts And Missiles