ACHARYA INSTITUTE OF TECHNOLOGY

Department of Aeronautical Engineering

Bengaluru-560107

COURSE OUTCOMES

DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE32	COURSE ID	C202
COURSE TITLE		Aero Thermodynamics					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C202.1		Remember the fundamentals of energy interactions, laws of thermodynamics along with various processes involved and properties					
C202.2		Understand The relationship between different temperature scales, energy and its property.					
C202.3		Relate the principles of gas cycles in various systems					
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE33	COURSE ID	C203
COURSE TITLE		Mechanics of Materials					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C203.1		Understand Elastic Properties of Materials, Different types of stress due to application of loads and energy stored in various structural members					
C203.2		Compute the relation for stress and strain distribution, Shear force and Bending moment diagram, Torque and stability of columns from failure theories					
C203.3		Evaluate the stresses, strains and strain energy in Bars, Cylinders, Beams, Shafts, and Columns					
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE34	COURSE ID	C204
COURSE TITLE		Elements of Aeronautics					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C204.1		Assimilate the basic principles of aviation.					
C204.2		Gain the knowledge on basic principle of aviation.					
C204.3		Appreciate the complexities involved during development of flight vehicles.					
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE35	COURSE ID	C205
COURSE TITLE		Mechanics of Fluids					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C205.1		Understand the basics of fluid properties, statics, dynamics, kinematics, concept of boundary layer in fluid flow as well as CFD					
C205.2		Absorb the essence of governing laws of fluid flow					
C205.3		Evaluate the key fluid properties, meta centric height, lift, drag.					

ACHARYA INSTITUTE OF TECHNOLOGY

Department of Aeronautical Engineering

Bengaluru-560107

DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE36	COURSE ID	C206
COURSE TITLE		Measurement and Metrology					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C206.1		Have foundational knowledge on metrology, measurements, measuring equipmentsCO3: Measure force, torque, pressure, strain, temperature, screw, and gear profile.					
C206.2		Implement the knowledge in measuring instruments and their utilization					
C206.3		Measure force, torque, pressure, strain, temperature, screw and gear profile.					
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AEL37A	COURSE ID	C207
COURSE TITLE		MEASUREMENTS AND METROLOGY LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C207.1		Understand the principles of measurements related to mechanical measurements, electronic instrumentation and thermal effects					
C207.2		Demonstrate the ability to perform measurements and tabulate the readings and infer the results Graphically/mathematically					
C207.3		Interpret the concepts and results both orally and written.					
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AEL38	COURSE ID	C208
COURSE TITLE		MACHINE SHOP LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C208.1		Demonstrate shop safety associated with operation of machine tool equipment and metal cutting equipment and use of personal protective equipment found in industrial environment					
C208.2		o familiarizes the machines in the workshop and interpret the blueprints of mechanical drawing/job sheet.					
C208.3		To operate machines (Lathe, Milling, shaping) in accordance with industry standards.					
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE51	COURSE ID	C301
COURSE TITLE		MANAGEMENT AND ENTREPRENEURSHIP					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C301.1		Understand foundations of management and entrepreneurship.					
C301.2		Apply the knowledge on planning, organizing, staffing, directing and controlling.					
C301.3		implement the knowledge gained in both small- and large-scale industries.					

ACHARYA INSTITUTE OF TECHNOLOGY

Department of Aeronautical Engineering

Bengaluru-560107

DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE52	COURSE ID	C302
COURSE TITLE		AERODYNAMICS - II					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C302.1		Understand the concepts of compressible flow and shock phenomenon.					
C302.2		Apply knowledge of oblique shock and expansion wave formation.					
C302.3		Analyze the compressible flow problems.					
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE53	COURSE ID	C303
COURSE TITLE		AIRCRAFT STRUCTURES - I					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C303.1		Able to compare various types of stresses and strains.					
C303.2		Identify appropriate materials for suitable application based on properties.					
C303.3		Able to analyse the stresses on the structures under various loading conditions.					
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE54	COURSE ID	C304
COURSE TITLE		INTRODUCTION TO COMPOSITE MATERIALS					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C304.1		Explain the advantages of using composite materials as an alternative to conventional materials for specific applications					
C304.2		Describe the advanced fabrication and processing for producing composite parts					
C304.3		Evaluate the micro- and macro-mechanical behavior of composite laminates.					
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE55	COURSE ID	C305
COURSE TITLE		AIRCRAFT SYSTEMS & INSTRUMENTATION					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C305.1		Understand the conventional and modern control systems.					
C305.2		Compare the classes of the aircraft.					
C305.3		Categorize different types of aircraft instruments					
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE56	COURSE ID	C306
COURSE TITLE		THEORY OF VIBRATIONS					

ACHARYA INSTITUTE OF TECHNOLOGY

Department of Aeronautical Engineering

Bengaluru-560107

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C306.1	Understand the principle of Simple Harmonic Motions and various types of vibrations.
C306.2	Determine the vibrations using vibration instruments.
C306.3	Analyze the multi-degree freedom systems

DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AEL57	COURSE ID	C307
COURSE TITLE		AERODYNAMICS LAB					

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C307.1	Understand different types of wind tunnel and calibrate the test section speed of the wind tunnel.
C307.2	Illustrate the stream patterns over bluff and slender bodies.
C307.3	Investigate the variation of surface pressure over bluff and slender bodies.
C307.4	Predict the lift and drag co efficient over an airplane model

DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AEL58	COURSE ID	C308
COURSE TITLE		ENERGY CONVERSION AND FLUID MECHANICS LAB					

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C308.1	Understand basic terms, working process and performance parameters of IC engines.
C308.2	Tabulate and interpret the performance parameters of IC engines, properties of fuel and lubricating oils.
C308.3	Define and understand fluid and their properties
C308.4	Demonstrate and obtain mathematical relations to calculate the efficiency and discharge by the machineries

DEPARTMENT	AE	SEMESTER	7	COURSE CODE	18AE71	COURSE ID	C401
COURSE TITLE		AIRCRAFT STABILITY AND CONTROL					

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C401.1	Understand the concepts of aircraft stability and control
C401.2	Derive equations of motions and analyze stability parameters.
C401.3	Apply the knowledge of dynamic stability.

DEPARTMENT	AE	SEMESTER	7	COURSE CODE	18AE72	COURSE ID	C402
COURSE TITLE		COMPUTATIONAL FLUID DYNAMICS					

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C402.1	Apply the basic principles of computational fluid dynamics.
C402.2	Derive the governing flow equations such as continuity, momentum, and energy equations

C402.3		Compute the types of physical flow based on partial differential equations.					
DEPARTMENT	**AE**	**SEMESTER**	**7**	**COURSE CODE**	**18AE731**	**COURSE ID**	**C403**
COURSE TITLE		**FATIGUE AND FRACTURE MECHANICS**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C403.1		Understand the basics of fatigue of structures.					
C403.2		Comprehend the fracture mechanics.					
C403.3		Acquire the knowledge of fatigue design and testing.					
DEPARTMENT	**AE**	**SEMESTER**	**7**	**COURSE CODE**	**18AE742**	**COURSE ID**	**C404**
COURSE TITLE		**WIND TUNNEL TECHNIQUES**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C404.1		Classify the types and functions of wind tunnel.					
C404.2		Apply the principles and procedures for model testing in the wind tunnel					
C404.3		Distinguish the conventional measurement techniques and special wind tunnel techniques					
DEPARTMENT	**AE**	**SEMESTER**	**7**	**COURSE CODE**	**18AE753**	**COURSE ID**	**C405**
COURSE TITLE		**UNMANNED AERIAL VEHICLES**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C405.1		Select the propulsion system and materials for structures.					
C405.2		Explain the basic aerodynamics, performance, stability and control required for UAV.					
C405.3		Apply the basic concepts of UAV systems					
DEPARTMENT	**AE**	**SEMESTER**	**7**	**COURSE CODE**	**18AEL76**	**COURSE ID**	**C406**
COURSE TITLE		**MODELING & ANALYSIS LAB**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C406.1		Understand the design drawings.					
C406.2		Design the component/parts effectively using the CAE tools					
C406.3		Analyze component/parts effectively using the CAE tools					
C406.4		Interpret the concepts and results both orally and written					

ACHARYA INSTITUTE OF TECHNOLOGY

Department of Aeronautical Engineering

Bengaluru-560107

DEPARTMENT	AE	SEMESTER	7	COURSE CODE	18AEL77	COURSE ID	C407
COURSE TITLE		FLIGHT SIMULATION LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C407.1		Write program to simulate concepts of flight mechanics (Control systems, aircraft performance, aircraft stability and control)					
C407.2		Simulate/Implement discrete computations on systems and verify its properties					
C407.3		Interpret the simulation result and plots both orally and written.					
C407.4		Gain experience in the application of MATLAB to real engineering designs.					
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE41	COURSE ID	C211
COURSE TITLE		COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C211.1		To provide an insight into applications of complex variables, conformal mapping and special functions arising in potential theory, quantum mechanics, heat conduction and field theory					
C211.2		To develop probability distribution of discrete, continuous random variables and joint probability distribution occurring in digital signal processing, design engineering and microwave engineering.					
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE42	COURSE ID	C212
COURSE TITLE		Aerodynamics-I					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C212.1		Understand the concepts and foundation of aerodynamics.					
C212.2		Derive basic equations of incompressible flow over finite wings and aerofoil					
C212.3		Assimilate finite wing theory, high lift systems from the aerodynamics viewpoint.					
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE43	COURSE ID	C213
COURSE TITLE		Aircraft Propulsion					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C213.1		Remember the basic principles and theory of aircraft propulsion					
C213.2		Understand the functions of centrifugal, axial compressors, axial and radial turbines					
C213.3		Compute the performance of nozzles & inlets and combustion chamber.					
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE44	COURSE ID	C214
COURSE TITLE		Mechanisms and Machine Theory					

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C214.1	Understand mechanisms and characteristics of machines.
C214.2	Differentiate kinematics and dynamics of machines.
C214.3	Apply the concepts of mechanism to gears, gyroscope, rotating and reciprocating masses.

DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE45	COURSE ID	C211
COURSE TITLE	Aircraft Material Science						

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C215.1	Understand the basics and properties of different aircraft materials like metallic, non-metallic, alloys and super alloys, composites, ablative materials.
C215.2	Describe the processing of ablative materials and prevention technique for corrosion process.
C215.3	Illustrate the potentialities of various high energy materials and material selection procedure

DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE46	COURSE ID	C216
COURSE TITLE	Turbomachines						

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C216.1	Understand energy transfer and energy transformation in turbomachines.
C216.2	Compute the performance characteristics of turbomachines
C216.3	Relate the concepts to turbomachines to hydraulic pumps and turbines.

DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AEL47A	COURSE ID	C217
COURSE TITLE	MATERIAL TESTING LAB						

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C217.1	Understand the different material properties, heat treatment processes, and demonstrate microstructures of the materials.
C217.2	Perform destructive and non-destructive test on materials to find different strengths and characteristics of materials.
C217.3	Tabulate the readings and interpret the results Graphically/mathematically.

DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AEL48	COURSE ID	C218
COURSE TITLE	COMPUTER AIDED AIRCRAFT DRAWING						

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS

C218.1	Understand the design/assembly drawings						
C218.2	Familiarize the tools in standard CAD package						
C218.3	Draw orthographic projections and sectional views of standard primitives, thread forms, joints and couplings and Machine components						
C218.4	Model parts and assembly of aircraft components						
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AE61**	**COURSE ID**	**C311**
COURSE TITLE	**AIRCRAFT PERFORMANCE**						
COURSE OUTCOME NO	**COURSE OUTCOME STATEMENTS**						
C311.1	Understand the basics aircraft performances						
C311.2	Choose the aircraft performances in steady accelerated and unaccelerated flights						
C311.3	Analyze the aircraft manoeuvre performance.						
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AE62**	**COURSE ID**	**C312**
COURSE TITLE	**AIRCRAFT STRUCTURES - II**						
COURSE OUTCOME NO	**COURSE OUTCOME STATEMENTS**						
C312.1	Apply the concepts of thin-walled structures in bending and shear flow.						
C312.2	Identify the structural failures and its design concepts						
C312.3	Evaluate the stress in wings and fuselage frames						
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AE63**	**COURSE ID**	**C313**
COURSE TITLE	**FINITE ELEMENT METHOD**						
COURSE OUTCOME NO	**COURSE OUTCOME STATEMENTS**						
C313.1	Understand the fundamentals of FEM, importance of discretisation process by using different finite elements and basic steps in FEM.						
C313.2	Deduce the governing equations for bars, beams, truss etc due to different loading and boundary conditions						
C313.3	Analyze the two- and three-dimensional elements, Isoperimetric, Axisymmetric Elements and field problems.						
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AE642**	**COURSE ID**	**C314**
COURSE TITLE	**NUMERICAL METHODS**						
COURSE OUTCOME NO	**COURSE OUTCOME STATEMENTS**						
C314.1	Apply the basic concepts of numerical methods						
C314.2	Compute the Eigen values, Eigen vectors, numerical differentiation and integration.						

C314.3		Perform the curve fitting and root finding.					
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AE653**	**COURSE ID**	**C315**
COURSE TITLE		**BASICS OF ROCKETS & MISSILES**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C315.1		Identify the types of space launch vehicles and missiles.					
C315.2		Distinguish the solid and liquid propellant motors.					
C315.3		Classify different types of materials used for rockets and missiles.					
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AEL66**	**COURSE ID**	**C316**
COURSE TITLE		**AIRCRAFT PROPULSION LAB**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C316.1		Understand the basic principle and theory of aircraft propulsion and heat transfer.					
C316.2		Demonstrate and tabulate the properties of compressors, turbine, measurement of a flame and behavior of flow through nozzle/ ducts.					
C316.3		Evaluate the performance of aircraft engines components.					
C316.4		Interpret the concepts and results both orally and written					
DEPARTMENT	**AE**	**SEMESTER**	**6**	**COURSE CODE**	**18AEL67**	**COURSE ID**	**C317**
COURSE TITLE		**AIRCRAFT STRUCTURES LAB**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C317.1		Understand and determine the young's modulus for materials using strain gauge and extensometer and their deflections for various loading conditions.					
C317.2		Investigate the Maxwell's Reciprocal theorem and Principle of superposition using beams under various load conditions.					
C317.3		Compare the theoretical and experimental results of beams and columns with various end conditions.					
C317.4		Analyze and interpret the theoretical and experimental results for beams and columns					
DEPARTMENT	**AE**	**SEMESTER**	**8**	**COURSE CODE**	**18AE81**	**COURSE ID**	**C411**
COURSE TITLE		**FLIGHT VEHICLE DESIGN**					
COURSE OUTCOME NO		**COURSE OUTCOME STATEMENTS**					
C411.1		Enumerate the conceptual design process of the aircraft.					
C411.2		Relate thrust loading, wing loading and power loading in the design process.					
C411.3		Relate thrust loading, wing loading and power loading in the design process.					
C411.4		Analyze the design of all components					
DEPARTMENT	**AE**	**SEMESTER**	**8**	**COURSE CODE**	**18AE821**	**COURSE ID**	**C412**
COURSE TITLE		**AVIONICS**					

ACHARYA INSTITUTE OF TECHNOLOGY

Department of Aeronautical Engineering

Bengaluru-560107

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C412.1	Understand the basic concepts of Avionics Systems in civil and military aircrafts.
C412.2	Interpret the working of various avionics systems in an aircraft.
C412.3	Employ the understanding and use of microprocessors, data buses, display systems, avionics system architectures and system integration in effective analysis of avionics systems

DEPARTMENT	AE	SEMESTER	8	COURSE CODE	18AE822	COURSE ID	C413
COURSE TITLE		BOUNDARY LAYER THEORY					

COURSE OUTCOME NO	COURSE OUTCOME STATEMENTS
C413.1	Understand the concepts of boundary layer theory
C413.2	Apply the basic concepts, physics, and mathematical descriptions of viscous flow.
C413.3	Differentiate between boundary layers (laminar, turbulent) and boundary layer model.