



# 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		Apply the concepts and definitions of thermodynamics.					
C202.2		Differentiate thermodynamic work and heat and apply I law and II law of thermodynamics to different process.					
C202.3		Apply the principles of various gas cycles					
C202.4							
C202.5							
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE33	COURSE ID	C203
COURSE TITLE		Mechanics of Materials					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C203.1		Apply the basic concepts of strength of materials.					
C203.2		Compute stress, strain under different loadings.					
C203.3		Distinguish the properties of different materials.					
C203.4							
C203.5							
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE34	COURSE ID	C204
COURSE TITLE		Elements of Aeronautics					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C204.1		Appreciate and apply the basic principle of aviation					
C204.2		Apply the concepts of fundamentals of flight, basics of aircraft structures, aircraft propulsion and aircraft materials during the development of an aircraft					
C204.3		Comprehend the complexities involved during development of flight vehicles.					
C204.4							
C204.5							
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE35	COURSE ID	C205
COURSE TITLE		Mechanics of Fluids					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C205.1		Evaluate the effect of fluid properties.					
C205.2		Apply the governing laws of fluid flow.					
C205.3		Classify different types of fluid flows.					
C205.4							
C205.5							



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DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AE36	COURSE ID	C206
COURSE TITLE		Measurement and Metrology					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C206.1		Apply the standards of measurement, system of limits, fits, tolerances and gauging.					
C206.2		Identify and use appropriate measuring instruments.					
C206.3		Acquire the knowledge on measurement and measurement systems					
C206.4							
C206.5							
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AEL37A	COURSE ID	C207
COURSE TITLE		MEASUREMENTS AND METROLOGY LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C207.1		Identify and classify different measuring tools related to experiments.					
C207.2		Identify, define, and explain accuracy, precision, and some additional terminology.					
C207.3		Conduct, Analyze, interpret, and present measurement data from measurements experiments.					
C207.4							
C207.5							
DEPARTMENT	AE	SEMESTER	3	COURSE CODE	18AEL38	COURSE ID	C208
COURSE TITLE		MACHINE SHOP LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C208.1		Demonstrate the operation of general purpose machine tools and manufacturing process.					
C208.2		Identify the special purpose machine tools for specific requirements					
C208.3		Develop physical models using different manufacturing processes.					
C208.4							
C208.5							
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE51	COURSE ID	C301
COURSE TITLE		MANAGEMENT AND ENTREPRENEURSHIP					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C301.1		Explain about the management and planning.					
C301.2		Apply the knowledge on planning, organizing, staffing, directing and controlling.					
C301.3		Describe the requirements towards the small-scale industries and project preparation.					
C301.4							
C301.5							

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DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE52	COURSE ID	C302
COURSE TITLE		AERODYNAMICS - II					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C302.1		Utilize the concepts of compressible flow and shock phenomenon					
C302.2		Apply knowledge of oblique shock and expansion wave formation.					
C302.3		Measure the parameters high speed flow.					
C302.4							
C302.5							
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE53	COURSE ID	C303
COURSE TITLE		AIRCRAFT STRUCTURES - I					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C303.1		Apply the basic concepts of stress and strain analysis.					
C303.2		Compute the impact stress.					
C303.3		Identify appropriate materials for suitable application based on properties.					
C303.4							
C303.5							
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					
C304.4							
C304.5							
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE55	COURSE ID	C305
COURSE TITLE		AIRCRAFT SYSTEMS & INSTRUMENTATION					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C305.1		Distinguish the conventional and modern control systems.					
C305.2		Classify the aircraft systems.					
C305.3		Categorize different types of aircraft instruments					
C305.4							
C305.5							
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AE56	COURSE ID	C306
COURSE TITLE		THEORY OF VIBRATIONS					



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COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C306.1		Apply the principle of super position to Simple Harmonic Motions.					
C306.2		Determine the vibrations using vibration instruments.					
C306.3		Analyze the multi-degree freedom systems.					
C306.4							
C306.5							
DEPARTMENT	AE	SEMESTER	5	COURSE CODE	18AEL57	COURSE ID	C307
COURSE TITLE		AERODYNAMICS LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C307.1		Apply the flow visualization techniques.					
C307.2		Estimate the pressure distribution over the bodies.					
C307.3		Calculate the lift and drag.					
C307.4							
C307.5							
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		Operate the instrument and measure the BP, FP, IP and AF ratio.					
C308.2		Find the efficiency of the engine and Estimate the calorific value of the given fuel.					
C308.3		Verify the Bernoulli's equation.					
C308.4		Evaluate the viscosity of fluid.					
C308.5							
DEPARTMENT	AE	SEMESTER	7	COURSE CODE	18AE71	COURSE ID	C401
COURSE TITLE		AIRCRAFT STABILITY AND CONTROL					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C401.1		Apply the concepts of aircraft static stability and control.					
C401.2		Formulate EOMs and analyze stability parameters.					
C401.3		Apply the knowledge of dynamic stability.					
C401.4							
C401.5							
DEPARTMENT	AE	SEMESTER	7	COURSE CODE	18AE72	COURSE ID	C402
COURSE TITLE		COMPUTATIONAL FLUID DYNAMICS					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C402.1		Differentiate the FDM, FVM and FEM					
C402.2		Perform the flow, structural and thermal analysis.					



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<b>C402.3</b>		Utilize the discretization methods according to the application.					
<b>C402.4</b>							
<b>C402.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>7</b>	<b>COURSE CODE</b>	<b>18AE731</b>	<b>COURSE ID</b>	<b>C403</b>
<b>COURSE TITLE</b>		<b>FATIGUE AND FRACTURE MECHANICS</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C403.1</b>		Evaluate the fatigue of structures.					
<b>C403.2</b>		Determine the strength of cracked bodies.					
<b>C403.3</b>		Distinguish the safe life and fail safe design.					
<b>C403.4</b>							
<b>C403.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>7</b>	<b>COURSE CODE</b>	<b>18AE742</b>	<b>COURSE ID</b>	<b>C404</b>
<b>COURSE TITLE</b>		<b>WIND TUNNEL TECHNIQUES</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C404.1</b>		Apply the principles and procedures for model testing in the wind tunnel.					
<b>C404.2</b>		Classify the types and functions of wind tunnel.					
<b>C404.3</b>		Distinguish the conventional measurement techniques and special wind tunnel techniques.					
<b>C404.4</b>							
<b>C404.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>7</b>	<b>COURSE CODE</b>	<b>18AE753</b>	<b>COURSE ID</b>	<b>C405</b>
<b>COURSE TITLE</b>		<b>UNMANNED AERIAL VEHICLES</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C405.1</b>		Apply the basic concepts of UAV systems.					
<b>C405.2</b>		Explain the basic aerodynamics, performance, stability and control required for UAV.					
<b>C405.3</b>		Select the propulsion system and materials for structures.					
<b>C405.4</b>							
<b>C405.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>7</b>	<b>COURSE CODE</b>	<b>18AEL76</b>	<b>COURSE ID</b>	<b>C406</b>
<b>COURSE TITLE</b>		<b>MODELING &amp; ANALYSIS LAB</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C406.1</b>		Draw the geometric models of symmetric, cambered aerofoil, nozzle, wing and other structures.					
<b>C406.2</b>		Apply different types of meshing.					
<b>C406.3</b>		Perform the flow and stress analysis.					
<b>C406.4</b>							
<b>C406.5</b>							

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DEPARTMENT	AE	SEMESTER	7	COURSE CODE	18AEL77	COURSE ID	C407
COURSE TITLE		FLIGHT SIMULATION LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C407.1		Plot the root locus and bode plot.					
C407.2		Calculate the dynamics response of aircraft.					
C407.3		Use computational tools to model aircraft trajectory.					
C407.4							
C407.5							
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							
C211.2							
C211.3							
C211.4							
C211.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE42	COURSE ID	C212
COURSE TITLE		Aerodynamics-I					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C212.1		Evaluate typical airfoil characteristics and two-dimensional flows over airfoil					
C212.2		Compute and analyse the incompressible flow over finite wings					
C212.3		Apply finite wing theory and design high lift systems from the aerodynamics view point					
C212.4							
C212.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE43	COURSE ID	C213
COURSE TITLE		Aircraft Propulsion					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C213.1		Apply the basic principle and theory of aircraft propulsion.					
C213.2		Explain the functions of centrifugal, axial compressors, axial and radial turbines					
C213.3		Analyse the performance of nozzles & inlets and combustion chamber.					
C213.4							
C213.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE44	COURSE ID	C214
COURSE TITLE		Mechanisms and Machine Theory					



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COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C214.1		Apply the theory of velocity, acceleration and static force analysis to design of mechanisms.					
C214.2		Design spur gears, gear train, balancing of rotating and reciprocating masses.					
C214.3		Apply governors and gyroscope					
C214.4							
C214.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE45	COURSE ID	C211
COURSE TITLE		Aircraft Material Science					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C215.1		Identify appropriate aircraft materials for a given application.					
C215.2		Explain the properties of super alloys, ablative materials and high energy material.					
C215.3		Understand material corrosion process and apply prevention technique.					
C215.4							
C215.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AE46	COURSE ID	C216
COURSE TITLE		Turbomachines					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C216.1		Compute the energy transfer and energy transformation in turbo machines.					
C216.2		Analyze the design of turbo machine blades.					
C216.3		Apply hydraulic pumps and turbines for specific requirements					
C216.4							
C216.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AEL47A	COURSE ID	C217
COURSE TITLE		MATERIAL TESTING LAB					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C217.1		Apply the relations among materials and their properties.					
C217.2		Differentiate the formation, properties and significance of the alloys through different experiments.					
C217.3		Understand the different types, advantages and applications of various NDT methods.					
C217.4							
C217.5							
DEPARTMENT	AE	SEMESTER	4	COURSE CODE	18AEL48	COURSE ID	C218
COURSE TITLE		COMPUTER AIDED AIRCRAFT DRAWING					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					



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<b>C218.1</b>		Distinguish drawings of machine and aircraft components					
<b>C218.2</b>		Identify assembly drawings either manually or by using standard CAD packages.					
<b>C218.3</b>		Practice with standard components and their assembly of an aircraft.					
<b>C218.4</b>							
<b>C218.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AE61</b>	<b>COURSE ID</b>	<b>C311</b>
<b>COURSE TITLE</b>		<b>AIRCRAFT PERFORMANCE</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C311.1</b>		Apply the basic airplane performance parameters.					
<b>C311.2</b>		Differentiate the aircraft performance in steady un accelerated and accelerated flight.					
<b>C311.3</b>		Explain the aircraft maneuver performance.					
<b>C311.4</b>							
<b>C311.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AE62</b>	<b>COURSE ID</b>	<b>C312</b>
<b>COURSE TITLE</b>		<b>AIRCRAFT STRUCTURES - II</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C312.1</b>		Utilize the concepts of thin walled beams.					
<b>C312.2</b>		Calculate the buckling of plates					
<b>C312.3</b>		Analysis the stress in wings and fuselage frames.					
<b>C312.4</b>							
<b>C312.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AE63</b>	<b>COURSE ID</b>	<b>C313</b>
<b>COURSE TITLE</b>		<b>FINITE ELEMENT METHOD</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C313.1</b>		Apply discretisation technique for domain decomposition					
<b>C313.2</b>		Evaluate the effects of different loading and boundary conditions					
<b>C313.3</b>		Analyze the governing equations of finite element analysis					
<b>C313.4</b>							
<b>C313.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AE642</b>	<b>COURSE ID</b>	<b>C314</b>
<b>COURSE TITLE</b>		<b>NUMERICAL METHODS</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C314.1</b>		Apply the basic concepts of numerical methods.					
<b>C314.2</b>		Compute the Eigen values, Eigen vectors, numerical differentiation and integration.					





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<b>C314.3</b>		Perform the curve fitting and root finding.					
<b>C314.4</b>							
<b>C314.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AE653</b>	<b>COURSE ID</b>	<b>C315</b>
<b>COURSE TITLE</b>		<b>BASICS OF ROCKETS &amp; MISSILES</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C315.1</b>		Identify the types of space launch vehicles and missiles.					
<b>C315.2</b>		Distinguish the solid and liquid propellant motors.					
<b>C315.3</b>		Classify different types of materials used for rockets and missies.					
<b>C315.4</b>							
<b>C315.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AEL66</b>	<b>COURSE ID</b>	<b>C316</b>
<b>COURSE TITLE</b>		<b>AIRCRAFT PROPULSION LAB</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C316.1</b>		Analyze the cascade testing of axial compressor and axial turbine blade row.					
<b>C316.2</b>		Evaluate the performance of a jet engine.					
<b>C316.3</b>		Perform the measurement of a flame and nozzle flow.					
<b>C316.4</b>							
<b>C316.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>6</b>	<b>COURSE CODE</b>	<b>18AEL67</b>	<b>COURSE ID</b>	<b>C317</b>
<b>COURSE TITLE</b>		<b>AIRCRAFT STRUCTURES LAB</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C317.1</b>		Compute the deflection of simply supported beam and cantilever beam.					
<b>C317.2</b>		Verify the Maxwell's theorem.					
<b>C317.3</b>		Determine the buckling load, shear failure and shear centre.					
<b>C317.4</b>							
<b>C317.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>8</b>	<b>COURSE CODE</b>	<b>18AE81</b>	<b>COURSE ID</b>	<b>C411</b>
<b>COURSE TITLE</b>		<b>FLIGHT VEHICLE DESIGN</b>					
<b>COURSE OUTCOME NO</b>		<b>COURSE OUTCOME STATEMENTS</b>					
<b>C411.1</b>		Calculate the thrust to weight ratio and wing loading.					
<b>C411.2</b>		Compute the flight vehicle performance.					
<b>C411.3</b>		Select the subsystems as per vehicle design.					
<b>C411.4</b>							
<b>C411.5</b>							
<b>DEPARTMENT</b>	<b>AE</b>	<b>SEMESTER</b>	<b>8</b>	<b>COURSE CODE</b>	<b>18AE821</b>	<b>COURSE ID</b>	<b>C412</b>
<b>COURSE TITLE</b>		<b>AVIONICS</b>					



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COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C412.1		Select the suitable data bus based on the application.					
C412.2		Identify the suitable navigation systems.					
C412.3		Distinguish the avionics system architecture.					
C412.4							
C412.5							
DEPARTMENT	AE	SEMESTER	8	COURSE CODE	18AE822	COURSE ID	C413
COURSE TITLE		BOUNDARY LAYER THEORY					
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS					
C413.1		Apply the basic concepts and equations of viscous flow.					
C413.2		Discuss the importance of Navier Stokes equation.					
C413.3		Measure the turbulence.					
C413.4							
C413.5							