



Mapping of COs with POs and PSOs – Articulation Matrix (R23 Regulations)

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Semester I																	
23FE01-Communicative English	C01	Understand the context, topic, and pieces of specific information from social or Transactional dialogues.(L2-Understand)	2.1	--	--	--	1	--	--	--	--	3	3	--	2	--	--
	C02	Apply grammatical structures to formulate sentences and correct word forms. (L3-Apply)	1.8	--	--	--	1	--	--	--	--	3	3	--	2	--	--
	C03	Use discourse markers to speak clearly on a specific topic in informal discussions.(L3-Apply)	1.8	--	--	--	1	--	--	--	--	3	3	--	2	--	--
	C04	Read / Listen the texts and write summaries based on global comprehension of these texts.L2	2.1	--	--	--	1	--	--	--	--	3	3	--	2	--	--
	C05	Prepare a coherent paragraph, essay, and resume.(L3-Apply)	1.8	--	--	--	1	--	--	--	--	3	3	--	2	--	--
	AVG.	--	--	--	--	--	1	--	--	--	--	3	3	--	2	--	--
23FE03-Linear Algebra & Calculus	C01	Apply matrix algebra techniques to solve engineering problems.(L3-Apply)	1.8	3	2	--	--	--	--	--	--	--	--	--	1	--	--
	C02	Use Eigen values and Eigen vectors concept to find nature of quadratic form, inverse and powers of matrix.(L3-Apply)	1.8	3	2	--	--	--	--	--	--	--	--	--	1	--	--
	C03	Expand various functions using Mean value theorems. (L2_Understand)	2.1	--	1	--	--	--	--	--	--	--	--	--	1	--	--
	C04	Understand the concepts of functions of several variables which are useful in optimization.(L2-Understand)	2.1	3	2	--	--	--	--	--	--	--	--	--	1	--	--
	C05	Evaluate areas and volumes by using double and triple integrals.(L3-Apply)	1.8	3	2	--	--	--	--	--	--	--	--	--	1	--	--
	AVG.	--	--	3	1.8	--	--	--	--	--	--	--	--	--	1	--	--
23FE04-Engineering Physics	C01	Analyze the intensity variation of light due to interference, diffraction and Polarization .(L3-Apply)	1.8	3	3	2	1	1	1	1	--	--	--	--	1	--	--
	C02	Understand the basics of crystals and their structures.(L2-Understand)	2.1	3	3	2	1	1	1	1	--	--	--	--	1	--	--
	C03	Summarize various types of polarization of dielectrics and classify the magnetic materials.(L2-Understand)	2.1	3	3	2	1	1	1	--	--	--	--	--	1	--	--
	C04	Explain fundamentals of quantum mechanics and free electron theory of metals.(L2-Understand)	2.1	3	3	2	1	1	1	1	--	--	--	--	1	--	--
	C05	Identify the type of semiconductor using Hall Effect.(L3-Apply)	1.8	3	3	2	1	1	1	1	--	--	--	--	1	--	--
	AVG.	--	--	3	3	2	1	1	1	1	--	--	--	--	1	--	--

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02
23CM01-Basic Civil and Mechanical Engineering	C01	Describe various sub-divisions of Civil Engineering and to appreciate their role in societal development.(L1-Remember)	2.4	1	--	--	--	2	--	--	--	--	--	--	--	--	--
	C02	Outline the concepts of surveying and obtain the theoretical measurement of distances, angles and levels through surveying. (L2-Understand)	2.1	--	--	--	--	2	--	--	--	--	--	--	--	--	--
	C03	Classify the various materials used in construction and highway engineering and identify their appropriate usage as per the needs. (Understand) (L2-Understand)	2.1	1	--	--	--	2	--	--	--	--	--	--	--	--	--
	C04	Illustrate the fundamental principles involved in transportation network system, their individual components and their engineering importance.(L2-Understand)	2.1	1	--	--	--	1	--	--	--	--	--	--	--	--	--
	C05	Explain the quality parameters of various water sources and functions of selected water storage and conveyance structures.(L2-Understand)	2.1	--	--	--	--	1	--	--	--	--	--	--	--	--	--
	AVG.	--	--	1	--	--	--	1.6	--	--	--	--	--	--	--	--	--
23ME01-Engineering Graphics	C01	Understand the principles of engineering drawing, including engineering curves, scales, orthograph and isometric projections.(L2-Understand)	2.1	2	3	1	1	2	--	2	--	--	--	--	--	2	--
	C02	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views.(L3-Apply)	1.8	3	3	1	2	1	--	2	--	--	--	--	--	--	--
	C03	Understand and draw projection of solids in various positions in first quadrant. (L3-Apply)	1.8	2	3	1	2	1	--	2	--	--	--	--	--	--	--
	C04	Able to draw the development of surfaces of simple objects.(L3-Apply)	1.8	2	3	1	2	1	--	--	--	--	--	--	3	--	--
	C05	Prepare isometric and orthographic sections of simple solids.(L3-Apply)	1.8	3	3	3	3	2	--	--	--	--	1	--	--	--	--
	AVG.	--	--	2.4	3	1.4	2	1.4	--	2	--	--	1	--	3	2	--
23FE51-Communicative English Lab	C01	Understand the different aspect of the English language proficiency with emphasis on LSRW skills. (L2-Understand)	2.1	-	-	-	2	-	-	-	-	3	3	-	2	--	--
	C02	Apply Communication Skills through various language learning activities (L3-Apply)	1.8	-	-	-	2	-	-	-	-	3	3	-	2	--	--
	C03	Identifying the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking, comprehension. (L2-Understand)	2.1	-	-	-	2	-	-	-	-	3	3	-	2	--	--
	C04	Exhibit professionalism in participating in debates and group discussions. (L3-Apply)	1.8	-	-	-	2	-	-	-	-	3	3	-	2	--	--
	AVG.	--	--	--	--	--	2	--	--	--	--	3	3	--	2	--	--
23FE53-Engineering Physics Lab	C01	Analyse the wave properties of light using optical instruments (L3-Apply)	2.1	3	3	2	1	--	--	--	1	1	--	--	1	--	--
	C02	Estimate the elastic moduli of various materials and acceleration due to gravity (L3-Apply)	2.1	3	3	2	1	--	--	--	1	1	--	--	1	--	--
	C03	Demonstrate the vibrations in stretched strings.(L2-Understand)	2.4	3	3	2	1	--	--	--	1	1	--	--	1	--	--
	C04	Evaluate dielectric constant and magnetic field of	2.1	3	3	2	1	--	--	--	1	1	--	--	1	--	--

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		circular coil carrying current(L3-Apply)															
	C05	Examine the characteristics of semiconductor devices.(L3-Apply)	2.1	3	3	2	1	--	--	--	1	1	--	--	1	--	--
	AVG.	--	--	3	3	2	1	--	--	--	1	1	--	--	1	--	--
23IT51-IT Workshop	C01	Identify the components of a PC and Assemble & disassemble the same.(L2-Understand)	2.4	3	--	--	--	--	--	--	--	--	--	--	--	2	--
	C02	Experiment with installation of Operating System and Secure a computer from Cyber threats.(L3-Apply)	2.1	3	--	--	--	--	--	--	--	--	--	--	--	2	--
	C03	Develop presentation /documentation using Office tools and LaTeX.(L3-Apply)	2.1	3	--	--	--	2	--	--	2	2	2	--	--	2	--
	C04	Build dialogs and documents using ChatGPT.(L3-Apply)	2.1	3	--	--	--	--	--	--	--	--	--	--	--	2	--
	C05	Improve individual / teamwork skills, communication and report writing skills with ethical values.	2.4	3	--	--	--	2	--	--	2	--	2	--	--	2	--
	AVG.	--	--	3	--	--	--	2	--	--	2	2	2	--	--	2	--
23ME51-Engineering Workshop	C01	Describe various sub-divisions of Civil Engineering and to appreciate their role in societal development.(L1-Remember)	2.7	3	2	1	1	--	--	--	--	--	--	--	2	3	2
	C02	Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding.(L2-Understand)	2.4	3	2	1	1	--	--	--	--	--	--	--	2	3	2
	C03	Modal various basic prototypes in fitting trade.(L3-Apply)	2.1	3	2	1	1	--	--	--	--	--	--	--	2	3	2
	C04	Apply basic electrical engineering knowledge for House Wiring Practice.(L3-Apply)	2.1	3	2	1	1	--	--	--	--	--	--	--	2	3	2
	AVG.	--	--	3	2	1	1	--	--	--	--	--	--	--	2	3	2
Semester II																	
23FE05-Differential Equations & Vector Calculus	C01	Solve the differential equations related to various engineering fields.(L3-Apply)	1.8	3	3	-	-	-	-	-	-	-	-	-	1	--	--
	C02	Apply knowledge of partial differentiation in modelling and solving of Partial differential equations.(L3-Apply)	1.8	3	1	-	-	-	-	-	-	-	-	-	1	--	--
	C03	Interpret the physical meaning of different operators such as gradient, curl and divergence.(L3-Apply)	1.8	3	2	-	-	-	-	-	-	-	-	-	1	--	--
	C04	Evaluate the work done against a field, circulation and flux using Vector Calculus.(L3-Apply)	1.8	3	2	-	-	-	-	-	-	-	-	-	1	--	--
	AVG.	--	--	3	2	--	--	--	--	--	--	--	--	--	1	--	--
23FE06-Engineering Chemistry	C01	Identify the troubles due to hardness of water and its maintenance in industrial applications.(L2-Understand)	2.1	3	-	-	-	-	-	-	-	-	-	-	1	--	--
	C02	Apply Nernst equation in calculating cell potentials, compare batteries for different applications and outline the principles of corrosion for design and effective maintenance of various devices.(L2-Understand)	2.1	3	2	2	2	-	2	2	-	-	-	-	2	--	--
	C03	Outline the importance of polymers and alternate fuels. (L2-Understand)	2.1	3	3	2	2	-	2	2	-	-	-	-	2	--	--
	C04	Summarize the suitability of engineering materials like	2.1	3	2	2	2	-	2	2	-	-	-	-	2	--	--

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		composites, refractories, lubricants, and building materials.(L2-Understand)															
	C05	Understand the concepts of collides, micelles and nanomaterials.(L2-Understand)	2.1	3	2	1	1	-	-	-	-	-	-	-	1	--	--
	AVG.	--	--	3	2.25	1.75	1.75	--	2	2	--	--	--	--	1.6	--	--
23EE01-Basic Electrical & Electronics Engineering	C01	Extract electrical variables of AC & DC circuits using fundamental laws. (L2-Understand)	2.1	3	2	3	--	--	--	--	--	--	--	--	--	--	--
	C02	Understand the operation of electrical machines and measuring instruments. (L2-Understand)	2.1	2	2	-	--	--	--	--	--	--	--	--	1	--	--
	C03	Classify various energy resources, safety measures and interpret electricity bill generation in electrical systems.(L2-Understand)	2.1	2	2	-	--	--	3	--	--	--	--	2	2	--	--
	C04	Interpret the characteristics of various semiconductor devices. (L1 - Remember)	2.4	3	2	-	--	--	--	--	--	--	--	--	-	--	--
	C05	Infer the operation of rectifiers, amplifiers. (L2-Understand)	2.1	3	2	-	--	--	--	--	--	--	--	--	2	--	--
	C06	Contrast various logic gates, sequential and combinational logic circuits. (L2-Understand)	2.1	2	2	2	--	--	--	--	--	--	--	--	1	--	--
	AVG.	--	--	2.5	2	2.5	--	--	3	--	--	--	--	2	1.5	--	--
23CS01-Introduction to Programming	C01	Understand basics of computers, the concept of algorithm and algorithmic thinking.(L2-Understand)	2.1	3	-	-	-	-	-	-	-	-	-	-	-	1	-
	C02	Understand the features of C language.(L2-Understand)	2.1	3	-	-	-	-	-	-	-	-	-	-	-	2	-
	C03	Interpret the problem and develop an algorithm to solve it.(L3-Apply)	1.8	3	2	-	-	-	-	-	-	-	-	-	-	2	-
	C04	Implement various algorithms using the C programming language.(L3-Apply)	1.8	3	2	-	-	-	-	-	-	-	-	-	-	2	-
	C05	Develop skills required for problem-solving and optimizing the code.(L3-Apply)	1.8	3	-	-	-	-	-	-	-	-	-	-	-	2	-
	AVG.	--	--	3	2	--	--	--	--	--	--	--	--	--	--	1.8	--
23ME02-Engineering Mechanics	C01	Determine the resultant of coplanar concurrent and non-concurrent force systems.(L3-Apply)	1.8	3	3	1	--	--	--	--	--	--	--	--	--	--	3
	C02	Apply the Static equilibrium conditions to determine unknown planar force systems and determine the frictional forces for the bodies in contact.(L3-Apply)	1.8	3	3	2	1	--	--	--	--	--	--	--	--	--	3
	C03	Calculate the centroids, centre of gravity and moment of inertia of geometrical shapes (L3-Apply)	1.8	3	2	--	2	--	--	--	--	--	--	--	--	--	3
	C04	Apply the principles of work energy and impulse-momentum to solve the problems of rectilinear and curvilinear motion of a particle.(L3-Apply)	1.8	2	3	--	2	--	--	--	--	--	--	--	--	--	3
	C05	Solve the problems involving the translational and rotational motion of rigid bodies.(L3-Apply)	1.8	3	3	--	1	--	--	--	--	--	--	--	--	--	3
	AVG.	--	--	2.8	2.8	1.5	1.5	--	--	--	--	--	--	--	--	--	3
23FE54-Engineering Chemistry Lab	C01	Analyse important parameters of water to check its suitability for drinking purpose and industrial applications.(L4-Analyse)	1.8	3	2	--	--	--	1	2	--	--	--	--	--	--	--
	C02	Acquire practical knowledge related to preparation of Bakelite and nanomaterials.(L3-Apply)	2.1	3	-	--	--	--	2	1	--	--	--	--	--	--	--

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		Engines.(L4-Analyse)															
	AVG.	--	--	2.8	3	2.8	2.8	--	--	--	--	--	--	--	3	--	--
23MC01-Environmental Science	C01	The necessity of resources, their exploitation and sustainable management.(L2-Understand)	2.1	3	3	--	--	--	3	3	3	--	--	--	3	--	--
	C02	The interactions of human and ecosystems and their role in the food web in the natural world and the global biodiversity, threats to biodiversity and its conservation. (L2-Understand)	--	3	3	--	--	--	3	3	-	--	--	--	3	--	--
	C03	Environmental problems like pollution, disasters and possible solutions.(L1 - Remember)	2.4	3	--	--	--	--	--	2	-	--	--	--	2	--	--
	C04	The importance of environmental decision making in organizations through understanding the environmental law and environmental audits.(L1 - Remember)	2.4	3	--	--	--	--	2	3	2	--	--	--	3	--	--
	C05	Environmental issues like over population, human health etc related to local, regional and global levels.(L2-Understand)	2.1	--	3	--	--	--	3	3	3	--	--	--	3	--	--
	AVG.	--	--	3	3	--	--	--	2.7	2.8	2.7	--	--	--	2.8	--	--
23FE09-Engineering Fluid Mechanics Lab	C01	Apply the principles of fluid mechanics in discharge measuring devices used in pipes, channels and tanks.(L3-Apply)	2.1	2	2	--	3	--	--	--	--	--	--	--	--	--	--
	C02	Analyze performance of various hydraulic machines.(L4-Analyse)	1.8	2	2	2	3	--	--	--	--	1	--	--	2	2	2
	AVG.	--	--	2	2	2	3	--	--	--	--	1	--	--	2	2	2
23AE52-Applied Thermodynamics Lab	C01	Estimate various fuel characteristics through experimental testing.(L3-Apply)	2.1	3	2	3	1	--	--	--	--	--	--	--	1	2	1
	C02	Analyze the performance characteristics of Internal Combustion Engines.(L4-Analyse)	1.8	3	2	3	1	--	--	--	--	--	--	--	1	2	1
	C03	Evaluate the performance parameters of refrigeration and air conditioning systems.(L3-Apply)	2.1	3	2	3	1	--	--	--	--	--	--	--	1	2	1
	AVG.	--	--	3	2	3	1	--	--	--	--	--	--	--	1	2	1
23CS57-Python Programming Lab	C01	Solve the different methods for linear, non-linear and differential equations(L4-Analyse)	1.8	3	--	-	2	1	--	--	--	--	--	--	--	--	--
	C02	Learn the PYTHON Programming language.(L1 - Remember)	2.4	--	3	2	3	2	--	--	--	--	--	--	--	--	--
	C03	Familiar with the strings and matrices in PYTHON.(L3-Apply)	2.1	--	3	2	3	2	--	--	--	--	--	--	--	--	--
	C04	Write the Program scripts and functions in PYTHON to solve the methods.L6	-	--	--	--	-	-	--	--	2	2	2	--	--	--	--
	C05	Evaluate different methods of numerical solutions.L5	-	3	3	2	3	2	--	--	--	--	--	--	--	--	--
	AVG.	--	--	3	3	2	2.75	1.75	--	--	2	2	2	--	--	--	--
23AES1-Computer Aided Design Lab	C01	Draw simple objects using functional tools in AutoCAD.(L2-Understand)	2.4	3	1	1	1	1	--	--	--	--	--	--	2	3	2
	C02	Create solid models of machine and Simple Aircraft components.(L3-Apply)	2.1	3	1	1	1	1	--	--	--	--	--	--	2	3	2
	C03	Translate 3D components into 2D drawings.(L3-Apply)	2.1	3	1	1	1	1	--	--	--	--	--	--	2	3	2
	AVG.	--	--	3	1	1	1	1	--	--	--	--	--	--	2	3	2
Semester IV																	

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02
23HS03-Industrial Management	C01	Learn how to design the optimal layout.(L1 - Remember)	2.4	3	3	2	3	--	3	--	--	--	--	3	2	--	3
	C02	Demonstrate work study methods.(L3-Apply)	1.8	2	2	2	3	3	3	--	--	--	--	3	2	--	3
	C03	Explain Quality Control Techniques.(L2-Understand)	2.1	2	3	2	2	3	3	--	--	--	--	3	2	--	3
	C04	Discuss the financial management aspects.(L2-Understand)	2.1	3	2	2	3	--	3	--	--	--	--	3	2	--	3
	C05	Understand the human resource management methods.(L2-Understand)	2.1	2	2	2	3	3	3	--	--	--	--	3	2	--	3
	AVG.	--	--	2.4	2.4	2	2.8	3	3	--	--	--	--	3	2	--	3
23FE13-Complex variables, Probability and Statistics	C01	Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic. ((L3-Apply))	1.8	3	2	1	--	--	--	--	--	--	--	--	1	--	--
	C02	Make use of Cauchy, residue theorem to evaluate certain integrals. ((L3-Apply))	1.8	3	2	1	--	--	--	--	--	--	--	--	1	--	--
	C03	Infer the statistical inferential methods based on small and large sample tests. ((L4-Analyse))	1.5	3	2	2	3	--	--	--	--	--	--	--	1	--	--
	C04	Find the differentiation and integration of complex functions used in engineering problems. ((L3-Apply))	1.8	3	2	1	--	--	--	--	--	--	--	--	1	--	--
	C05	Design the components of a classical hypothesis test. ((L4-Analyse))	1.5	3	3	2	3	--	--	--	--	--	--	--	1	--	--
	AVG.	--	--	3	2.2	1.4	3	--	--	--	--	--	--	--	1	--	--
23AE04-Materials and Manufacturing Technology	C01	Understand the properties of the metals and alloys based on structures.(L2-Understand)	2.1	3	--	2	2	--	--	--	--	--	--	--	1	3	3
	C02	Classify, construct and analyze equilibrium diagrams, various ferrous, non-ferrous metals and alloys.(L2-Understand)	2.1	3	--	2	2	--	--	--	--	--	--	--	1	3	3
	C03	Acquire knowledge of the basic aspects of casting process.(L2-Understand)	2.1	3	--	2	2	--	--	--	--	--	--	--	1	3	3
	C04	Know the various basic concepts of welding process, metal forming process and sheet metal operations in the manufacturing of products.(L2-Understand)	2.1	3	--	2	2	--	--	--	--	--	--	--	1	3	3
	C05	Know different conventional and unconventional machining processes while manufacturing a product.(L2-Understand)	2.1	3	--	2	2	--	--	--	--	--	--	--	1	3	3
	AVG.	--	--	3	--	2	2	--	--	--	--	--	--	--	1	3	3
23AE05-Solid Mechanics	C01	Describe the concept of stress and strain to analyze and design structural members and machine parts under various loading conditions.((L2-Understand))	2.1	3	2	1	--	--	--	--	--	--	--	--	2	2	2
	C02	Evaluate stress, shear force, bending moment, under different loading conditions.((L3-Apply))	1.8	2	3	1	--	--	--	--	--	--	--	--	2	2	3
	C03	Analyze Bending and torsional stresses of different components.((L3-Apply))	1.8	3	2	1	--	--	--	--	--	--	--	--	2	2	3
	C04	Understand shear stress distributions over different cross sections and concept of Principle Stresses.((L2-Understand))	2.1	3	2	1	--	--	--	--	--	--	--	--	2	2	2
	C05	Model and analyze the behaviour of basic structural members subjected to deflection and internal pressure.((L4-Analyse))	1.5	3	1	2	--	--	--	--	--	--	--	--	2	2	2
	AVG.	--	--	2.8	2	1.2	--	--	--	--	--	--	--	--	2	2	2.4
23AE06-Aerodynamics	C01	Apply Laplace equation for obtaining 2D and	1.8	3	1	2	1	2	-	-	1	1	1	-	2	3	2

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	C04	Analyze the stability and critical buckling loads of columns under axial and eccentric loadings.(L4-Analyse)	1.5	3	3	3	2	--	--	--	--	--	--	--	3	3	3
	C05	Estimate bending stresses in beams subjected to unsymmetrical bending.(L3-Apply)	1.8	3	3	3	2	--	--	--	--	--	--	--	3	3	3
	AVG.	--	--	3	2.8	2.4	2	--	--	--	--	--	--	--	2.6	2.6	3
23AE08-Gas Dynamics	C01	Apply the of compressible fluid flow equations to solve flow problems.(L3-Apply)	1.8	3	3	2	2	--	--	--	--	--	--	--	3	3	3
	C02	Apply steady one-dimensional flow principles in designing nozzles and diffusers(L3-Apply)	1.8	3	2	2	2	--	--	--	--	--	--	--	3	3	3
	C03	Analyze the supersonic flow behavior over objects.(L4-Analyse)	1.5	3	3	2	3	--	--	--	--	--	--	--	3	3	3
	C04	Analyze fluid flow through ducts by considering friction and heat transfer affects.(L4-Analyse)	1.5	3	2	2	3	--	--	--	--	--	--	--	3	3	3
	C05	Apply compressible flow theory to analyze flow over wings.(L3-Apply)	1.8	3	2	2	3	--	--	--	--	--	--	--	3	3	3
	AVG.	--	--	3	2.4	2	2.6	--	--	--	--	--	--	--	3	3	3
23AE09-Aircraft Systems and Instruments	C01	Identify the various types of controls in the airplane design.(L2-Understand)	2.1	3	1	1	1	--	--	--	--	--	--	--	3	2	3
	C02	Understand the performance of hydraulic and pneumatic systems in the aircraft operation.(L2-Understand)	2.1	3	1	1	1	--	--	--	--	--	--	--	3	2	3
	C03	Understand the working of various engine systems of an aircraft.(L2-Understand)	2.1	3	1	1	1	--	--	--	--	--	--	--	3	2	3
	C04	Understand the functioning of auxiliary systems in the operation of an aircraft.(L2-Understand)	2.1	3	1	1	1	--	--	--	--	--	--	--	3	2	3
	C05	Understand the working of various instruments necessary for the aircraft operation.(L2-Understand)	2.1	3	1	1	1	--	--	--	--	--	--	--	3	2	3
	AVG.	--	--	3	1	1	1	--	--	--	--	--	--	--	3	2	3
23AE11-Finite Element Analysis	C01	Apply mathematical model for solution of common engineering problems.(L3-Apply)	1.8	3	3	2	1	--	--	--	--	--	--	--	2	3	3
	C02	Solve 2-Dimensional Structural Problems using CST Element.(L3-Apply)	1.8	3	3	3	3	--	--	--	--	--	--	--	3	3	3
	C03	Apply Axi-symmetric modelling concepts to solids of revolution for stress approximation.(L3-Apply)	1.8	3	3	3	3	--	--	--	--	--	--	--	3	3	3
	C04	Analyze the structural behavior of Trusses and Beams Elements.(L4-Analyse)	1.5	3	3	2	3	--	--	--	--	--	--	--	3	3	3
	C05	Estimate the natural frequencies and mode shapes of the bar elements.(L3-Apply)	--	3	3	3	2	--	--	--	--	--	--	--	3	3	3
	AVG.	--	--	3	3	2.6	2.4	--	--	--	--	--	--	--	2.8	3	3
23EC85-Fundamentals of Satellite Communications	C01	Describe the operational frequency bands, Space craft control mechanisms, sensors and navigational aids used in satellite systems Understand-(L2-Understand))	2.1	1	--	--	--	--	3	2	--	--	--	--	1	1	--
	C02	Summarize the functions of satellite space segment, earth segment, Multiple access techniques and satellite services. (Understand-(L2-Understand))	2.1	1	1	1	--	--	2	1	--	--	--	--	1	2	--
	C03	Illustrate the operational principles of satellite power system and space craft Control mechanism. (Understand-L2)	2.1	1	1	1	--	--	2	1	--	--	--	--	1	2	--
	C04	Apply the fundamental concepts of orbital mechanics & satellite communication and its application (Apply-L3)	1.8	1	1	1	--	--	2	1	--	--	--	--	1	2	--

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02
	AVG.	--	--	1	1	1	--	--	2.2	1.2	--	--	--	--	1	1.7	--
23AE55-Aerodynamics Lab	C01	To analyze the flow characteristics over aerodynamic bodies (Analyze-L4)	1.7	3	3	3	3	--	--	--	--	--	--	--	3	3	3
	C02	To analyze nozzle flow characteristics (Analyze-L4)	1.7	3	3	3	3	--	--	--	--	--	--	--	3	3	3
	AVG.	--	--	3	3	3	3	--	--	--	--	--	--	--	3	3	3
23AE56-Aircraft Component Modelling Using CATIA &	C01	Create, modify, and constrain 2D sketches for component design.(L3-Apply)	2.1	3	2	--	--	3	--	--	--	2	--	--	2	3	3
	C02	Develop 3D models and assemble various aircraft components using CATIA.(L3-Apply)	2.1	3	2	--	--	3	--	--	--	2	--	--	2	3	3
	AVG.	--	--	3	2	--	--	3	--	--	--	2	--	--	2	3	3
20AES3-computational structures Analysis Lab	C01	Perform static structural analysis on beams, trusses, and other structural elements using FEA tools.(L3-Apply)	2.1	3	2	2	2	3	--	--	--	--	--	--	3	3	3
	C02	Analyze aircraft structural components for deformation, stress distribution, and failure criteria.(L4-Analyse)	1.7	3	3	3	3	3	--	--	--	--	--	--	3	3	3
	AVG.		--	3	2.5	2.5	2.5	3	--	--	--	--	--	--	3	3	3
23EM01 – TINKERING LAB	C01	Use Arduino boards for controlling various applications. (Apply-(L3-Apply))	2.1	2	3	3	2	2	1	1	--	1	--	--	1	2	2
	C02	Control various applications using ESP32. (Apply-L3)	2.1	2	3	3	2	2	1	1	--	1	--	--	1	2	2
	C03	Design of different real time applications using breadboard, Mobile App and 3D printer. (Apply-L3)	2.1	2	3	3	2	2	1	1	--	1	--	--	1	2	2
	AVG.	--	--	2	3	3	2	2	1	1	--	1	--	--	1	2	2
Semester VI																	
23AE14 – AIRCRAFT STRUCTURES AND VIBRATIONS	C01	Determine shear flow and locate shear centres in open and closed thin-walled sections (L3-Apply)	1.95	3	3	2	2	2	--	--	1	1	1	--	2	3	3
	C02	Analyze the bending and buckling behavior of thin plates under various loading conditions (Analyze)	1.95	3	3	3	2	2	--	--	1	1	1	--	3	3	3
	C03	Analyse the shear flow distribution in aircraft structural members (L4-Analyse)	1.95	3	3	2	2	2	--	--	1	1	1	--	2	3	3
	C04	Formulate behaviour of systems with single degree of freedom under free vibrations (L3-Apply)	1.95	3	2	2	2	2	--	--	1	1	1	--	2	2	3
	C05	Analyse the forced vibration response of single degree of freedom systems (L4-Analyse)	1.8	3	3	2	2	2	--	--	1	1	1	--	2	2	3
	AVG.	--	--	3	2.8	2.2	2	2	--	--	1	1	1	--	2.2	2.6	3
23AE15 – AIR BREATHING PROPULSION	C01	Determine the performance parameters of various jet engines (L3-Apply)	1.95	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C02	Understand flow through subsonic and supersonic inlets (Understand)	1.8	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C03	Estimate the performance parameters of aircraft compressor (L3-Apply)	1.95	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C04	L2-Understand and identify the parameters governing the combustion process (L2-Understand)	2.1	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C05	Determine the performance parameters of turbines of jet engines (L3-Apply)	1.95	2	2	2	2	--	--	--	--	--	--	--	2	2	2
	AVG.	--	--	2.8	2.8	2.8	2	--	--	--	--	--	--	--	2	2.8	2
23AE16 – FLIGHT DYNAMICS	C01	Determine thrust and power requirement conditions for steady level flight (L3-Apply)	1.95	3	2	2	2	2	--	--	1	1	1	--	2	3	3
	C02	Estimate performance parameters of flight during manoeuvring (L3-Apply)	1.95	3	3	2	2	2	--	--	1	1	1	--	2	3	3

[illegible]

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02
	C02	L3-Apply momentum theory in the design of propeller (L3-Apply)	1.95	3	3	2	2	-	-	-	-	-	-	-	3	3	3
	C03	L2-Understand the performance of helicopter in various operating conditions (L2-Understand)	1.8	3	3	2	2	-	-	-	-	-	-	-	3	3	3
	C04	L2-Understand the stability modes of helicopter (L2-Understand)	1.8	3	3	2	2	-	-	-	-	-	-	-	3	3	3
	AVG.	--	--	3	3	2	2	--	--	--	--	--	--	--	3	3	3
23AE22 – EXPERIMENTAL STRESS ANALYSIS	C01	Formulate equations of stress under equilibrium conditions (L3-Apply)	1.95	3	3	2	2	2	--	--	--	--	--	--	--	3	2
	C02	L3-Apply the strain gage system for strain measurement on bodies acted upon forces (L3-Apply)	1.95	3	3	2	3	3	--	--	--	--	--	--	--	3	2
	C03	L3-Apply and analyze the moiré fringe method in a stress field (L3-Apply)	1.95	3	3	2	3	2	--	--	--	--	--	--	--	3	2
	C04	L4-Analyze the fringe pattern of materials using polariscope (L4-Analyze)	2.1	3	2	2	3	2	--	2	--	--	--	--	--	2	2
	AVG.	--	--	3	2.7	2	2.7	2.2	--	2	--	--	--	--	--	2.7	2
23AE23 – INSTRUMENTATION MEASUREMENTS AND EXPERIMENTS IN FLUIDS	C01	Employ the wind tunnels for aerodynamic testing of bodies (L3-Apply)	2.1	2	3	3	2	2	--	--	--	1	2	1	2	3	2
	C02	Adopt and use a visualization technique to understand the flow field (L3-Apply)	1.95	2	3	2	2	2	--	--	--	1	2	1	2	3	2
	C03	Employ suitable instruments to measure velocity, temperature and pressure of fluid flow (L3-Apply)	1.95	3	3	3	2	2	--	--	--	1	2	1	2	2	3
	C04	Acquire experimental data and estimate uncertainty during experimentation (L3-Apply)	1.95	2	3	3	3	2	--	--	--	1	3	1	2	2	3
	AVG.	--	--	2.2	3	2.7	2.2	2	--	--	--	1	2.2	1	2	2.5	2.5
23AE24 – INTRODUCTION TO SMART STRUCTURES	C01	L2-Understand the behavior of smart materials (L2-Understand)	1.95	3	2	2	--	2	--	--	--	--	--	--	--	3	2
	C02	Identify various types of smart materials for aerospace vehicles (L2-Understand)	1.95	3	2	2	--	2	--	--	--	--	--	--	--	3	2
	C03	L2-Understand properties of shape memory alloy smart materials (L2-Understand)	1.95	3	2	2	--	2	--	--	--	--	--	--	--	3	2
	C04	Identify advanced smart materials for various applications (L2-Understand)	1.95	3	2	2	2	2	--	--	--	--	--	--	--	3	2
	AVG.	--	--	3	2	2	2	2	--	--	--	--	--	--	--	3	2
23AE57 – AIRCRAFT STRUCTURES LAB	C01	L4-Analyze structural behavior of beams under different loading conditions (L4-Analyze)	1.95	3	3	2	3	2	--	--	1	1	1	--	3	3	3
	C02	Evaluate deflections and internal stresses using theoretical and experimental methods (L4-Analyze)	1.95	2	3	2	3	2	--	--	1	1	1	--	3	3	3
	C03	Examine and interpret results from NDT methods to assess defects in structural components (L4-Analyze)	1.95	2	3	2	3	2	--	--	1	1	1	--	3	3	3
	AVG.	--	--	2.3	3	2	3	2	--	--	1	1	1	--	3	3	3
23AE58 – PROPULSION LAB	C01	Estimate the performance parameters of various jet engine components (L3-Apply)	2.1	3	3	2	3	--	--	--	--	--	--	--	3	3	3
	C02	Characterize the wall and free jet (L3-Apply)	2.1	3	3	2	3	--	--	--	--	--	--	--	3	3	3
	C03	Prepare various solid propellant grains (L3-Apply)	2.1	3	3	2	3	--	--	--	--	--	--	--	3	3	3
	AVG.	--	--	3	3	2	3	--	--	--	--	--	--	--	3	3	3
Semester VII																	
23AE25-SPACE VEHICLE	C01	Understand the working of ramjet and scram jet engines	2.1	3	3	3	2	-	-	-	-	-	-	2	2	3	2

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02
PROPULSION		(L2 -Understand)															
	C02	Apply the preliminary parameters of rocket propulsion (L3-Apply)	1.95	3	3	3	2	-	-	-	-	-	-	2	2	3	2
	C03	Understand the working of liquid and solid propellant rocket systems (L2 -Understand)	2.1	3	3	3	2	-	-	-	-	-	-	2	2	3	2
	C04	Understand the advanced rocket propulsion techniques for a mission (L2 -Understand)	1.95	3	3	3	2	-	-	-	-	-	-	2	2	3	2
	AVG.	--	--	3	3	3	2	--	--	--	--	--	--	2	2	3	2
23ME29- OPERATIONS RESEARCH	C01	Formulate and solve linear programming problems using graphical and simplex methods. (L3 - Apply)	1.95	3	3	2	1	2	-	-	-	-	-	1	1	-	2
	C02	Solve transportation, assignment, and sequencing problems for efficient operations. (L3 - Apply)	2.1	3	3	2	1	2	-	-	-	-	-	1	1	-	2
	C03	Apply replacement scenarios and determine optimal strategies using game theory. (L3 - Apply)	1.95	3	3	2	2	2	-	-	-	-	-	1	1	-	2
	C04	Apply queuing theory and inventory models to optimize service and stock management. (L3 - Apply)	1.95	3	3	2	2	2	-	1	-	-	-	1	1	-	2
	C05	Solve multistage decision problems and apply simulation to real-life systems. (L3 - Apply)	1.95	3	3	2	3	3	-	-	-	-	-	2	2	-	2
	AVG.	--	--	3	3	2	1.8	2.2	--	1	--	--	--	1.2	1.2	--	2
23AE26-COMBUSTION IN AEROSPACE VEHICLE	C01	Understand the basic concepts of propulsion unit. (L2 - Understand)	2.1	3	2	1	--	2	--	--	--	--	--	--	--	3	2
	C02	Understand the various factors effecting the combustion process in aircraft engines-piston and jet engines. (L2 - Understand)	1.8	3	2	2	1	2	--	--	--	--	--	--	--	3	2
	C03	Understand the various combustion models of rocket engines. (L2 -Understand)	1.8	3	2	2	1	2	--	--	--	--	--	--	--	3	2
	C04	Understand the reaction and mixing process in supersonic combustion. (L2 -Understand)	1.8	3	3	2	2	2	--	--	--	--	--	--	--	3	2
	AVG.	--	--	3	2.25	1.75	1.33	2	--	--	--	--	--	--	--	3	2
23AE27 - SPACE TECHNOLOGY	C01	Understand space missions, coordinate systems, and basic orbital mechanics. (L2 -Understand)	2.1	3	3	1	1	-	-	-	-	-	-	-	2	2	3
	C02	Analyze rocket and ballistic missile trajectories. (L4 - Analyze)	2.1	3	3	3	3	-	-	-	-	-	-	-	2	3	3
	C03	Apply multi-body dynamics (L3 -Apply)	1.95	3	3	3	3	-	-	-	-	-	-	-	3	3	3
	C04	Understand orbital perturbations and Re-entry mechanics. (L2 -Understand)	1.8	3	3	1	1	-	-	-	-	-	-	-	2	3	3
	C05	understand the planning of interplanetary trajectories and mission planning. (L2 -Understand)	--	3	3	3	3	-	-	-	-	-	-	-	2	3	3
	AVG.	--	--	3	3	2.2	2.2	--	--	--	--	--	--	--	2.2	2.8	3
23AE28 - HYPERSONIC AERODYNAMICS	C01	Apply the hypersonic flow theories to analyze flow over bodies. (L3 -Apply)	1.95	3	3	3	2	3	--	--	--	--	--	--	--	3	2
	C02	Apply the inviscid and viscous effect of hypersonic flow over bodies. (L3 -Apply)	1.95	3	3	3	2	3	--	--	--	--	--	--	--	3	2
	C03	Apply the viscous interactions in hypersonic flow over bodies. (L3 -Apply)	1.95	3	3	3	3	3	--	--	--	--	--	--	--	3	2
	C04	Apply the effect of high temperature on gas dynamics. (L3 -Apply)	1.8	3	3	2	2	3	1	--	--	--	--	--	--	3	2
	AVG.	--	--	3	3	2.7	2.2	3	1	--	--	--	--	--	--	3	2
23AE29 – AERO	C01	Apply the effects of vortex induced vibration on aircraft	1.8	3	3	3	3	3	--	--	--	2	--	--	--	3	2

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02
ELASTICITY		wing. (L3 -Apply)															
	C02	Apply the aircraft wing by considering effects of flow induced vibration. (L3 -Apply)	1.95	3	3	3	3	3	--	--	--	2	--	--	--	3	2
	C03	Apply the aeroelastic phenomena in aircraft wing. (L3 -Apply)	1.8	3	3	3	3	3	--	--	--	2	--	--	--	3	2
	C04	Apply the aeroelastic phenomenon in various applications. (L3 -Apply)	1.8	3	2	3	2	2	--	--	--	--	--	--	--	3	2
	AVG.	--	--	3	2.7	3	2.7	2.7	--	--	--	2	--	--	--	3	2
23AE30 -COMPOSITE MATERIALS AND STRUCTURES	C01	Understand the compositions, advantages and applications of Composites. (L2 -Understand)	2.1	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C02	Apply different Analysis methods to identify properties of composite lamina. (L3 -Apply)	1.8	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C03	Apply CLT to identify characteristics of composite Laminates. (L3 -Apply)	1.8	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C04	Understand the nomenclature and failure modes of sandwich structures. (L2 -Understand)	2.1	3	3	3	2	--	--	--	--	--	--	--	2	3	2
	C05	Identify suitable fabrication techniques to manufacture composite laminates. (L2 -Understand)	1.95	2	2	2	2	--	--	--	--	--	--	--	2	2	2
	AVG.	--	--	2.8	2.8	2.8	2	--	--	--	--	--	--	--	2	2.8	2
23AE31 - FATIGUE AND FRACTURE MECHANICS	C01	Predict material failure for any combination of applied stresses. (L3 -Apply)	1.95	3	3	3	3	3	--	--	--	--	--	--	--	3	2
	C02	Estimate failure conditions of a structure. (L3 -Apply)	1.95	3	3	3	2	3	--	--	--	--	--	--	--	3	2
	C03	Determine the stress intensity factor for simple components of simple geometry. (L3 -Apply)	1.8	3	3	3	3	2	--	--	--	--	--	--	--	3	2
	C04	Understand the failure of materials due to high temperatures. (L3 -Apply)	1.95	3	2	2	2	2	1	--	--	--	--	--	--	2	2
	AVG.	--	--	3	2.7	2.7	2.5	2.5	1	--	--	--	--	--	--	2.75	2
23AE32- AERO ENGINE REPAIR AND MAINTENANCE	C01	Understand the performance of piston engine components. (L2 -Understand)	2.1	3	2	1	--	2	2	--	--	--	--	--	--	3	3
	C02	Inspect and troubleshoot the piston engines components. (L2 -Understand)	2.1	3	3	2	2	3	2	--	--	--	2	--	--	3	3
	C03	Prepare the procedures for the piston engine testing. (L2 -Understand)	1.95	3	2	2	2	3	2	--	--	--	2	2	--	3	3
	C04	Understand the performance of jet engine components. (L2 -Understand)	1.95	3	2	1	1	2	2	--	--	--	--	--	--	3	3
	C05	Understand overhaul procedures for jet engine components. (L2 -Understand)	1.95	3	3	2	2	3	2	--	--	--	2	2	--	3	3
	AVG.	--	--	3	2.4	1.6	1.7	2.6	2	--	--	--	2	2	--	3	3
23AE33 - MISSILE TECHNOLOGY	C01	Classify the missile and launch platforms and the various components. (L2 -Understand)	1.95	3	2	1	--	2	2	--	--	--	--	--	--	3	2
	C02	Understand the forces acting on a missile in flight. (L2 -Understand)	2.1	3	3	2	2	2	--	--	--	--	--	--	--	3	2
	C03	Learn the fundamentals of the guidance systems for missiles. (L2 -Understand)	1.95	3	3	2	2	2	--	--	--	--	--	--	--	3	2
	C04	Recollect the various materials and designs of missiles and their testing methods. (L2 -Understand)	1.95	3	2	2	1	2	2	--	--	--	--	--	--	3	2
	C05	Understand the types of propulsion systems used in the missiles. (L2 -Understand)	2.1	3	3	2	2	3	2	--	--	--	--	--	--	3	2
	AVG.	--	--	3	2.6	1.8	1.7	2.2	2	--	--	--	--	--	--	3	2

COURSE NAME	CO No.	COURSE OUTCOMES	CO Target	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02
23MC05-CONSTITUTION OF INDIA	C01	Explain the history, philosophy, and salient features of the Indian Constitution. (L2 -Understand)	2.1	--	--	--	--	--	3	3	3	--	2	--	3	--	--
	C02	Describe Fundamental Rights, Directive Principles of State Policy, and Fundamental Duties. (L2 -Understand)	2.1	--	--	--	--	--	3	2	3	--	2	--	3	--	--
	C03	List the powers and functions of the Legislature, Executive, and Judiciary. (L1 -Remember)	2.1	--	--	--	--	--	3	3	3	--	2	--	3	--	--
	C04	Interpret the structure and functioning of local administration and Panchayati Raj institutions. (L2 -Understand)	2.1	--	--	--	--	--	3	2	3	--	2	--	3	--	--
	C05	Explain the role of the Election Commission and welfare institutions for SC/ST/OBC and women. (L2 -Understand)	2.1	--	--	--	--	--	3	3	3	--	2	--	3	--	--
	AVG.	--	--	--	--	--	--	--	3	2.6	3	--	2	--	3	--	--
23AE59- AIRCRAFT DESIGN LAB	C01	To estimate design parameters of an aircraft system, component, or process as per the requirement. (L3 -Apply)	2.1	3	3	3	2	3	-	-	-	-	-	-	2	3	3
	C02	To calculate design parameters of an aircraft as per the assigned specifications. (L3 -Apply)	2.1	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	AVG.	--	--	3	3	3	2.5	3	--	--	--	--	--	--	2.5	3	3
23AES4- COMPUTATIONAL FLUID DYNAMICS LAB	C01	To demonstrate the various modules of ANSYS Fluent. (L3 -Apply)	2.1	3	2	2	-	3	-	-	-	2	-	-	3	3	3
	C02	To solve and analyze the characteristics of flow over aerodynamic objects and flow through ducts. (L4-Analyze)	1.95	3	3	3	2	3	-	-	-	3	-	-	3	3	3
	AVG.	--	--	3	2.5	2.5	2	3	--	--	--	2.5	--	--	3	3	3
23PI02 - EVALUATION OF INDUSTRY INTERNSHIP	C01	Work in real time situations in industries through hands on job execution [Apply-L3]	2.1	3	3	3	3	3	2	-	3	3	2	2	3	3	3
	C02	Apply theoretical aspects to solve engineering problems in the industries [Apply-L3]	2.1	3	3	3	2	3	2	-	-	3	-	2	3	3	3
	AVG.	--	--	3	3	3	3	3	2	--	3	3	2	2	3	3	3
Semester VIII																	
23PI03-PROJECT WORK	C01	Apply domain specific concepts to solve real time problems [Apply-L3]	2.1	3	3	3	3	3	-	-	-	-	-	3	3	3	3
	C02	Prepare a technical report with required analysis [Apply-L3]	2.1	3	3	3	2	3	-	-	3	3	3	3	3	3	3
	C03	To work in teams with professional and ethical values. [Apply-L3]	2.1	3	-	-	-	-	-	-	3	3	3	3	3	3	3
	AVG.	--	0	3	3	3	3	3	--	--	3	3	3	3	3	3	3

Head of the Department