Course Outcomes

	S.No.	Dept	Course Code	Course Name	Course Outcomes
	1	MECH	MEC 111	ENGLISH	
	2	MECH	MEC 112	Engineering Mathematics I	
	3	MECH	MEC 113	Engineering Physics	
	4	MECH	MEC 114	Engineering Drawing	Construct various engineering curves and understand the basic geometrical constructions. Prepare orthographic projections of points and lines Prepare orthographic projections of plane surfaces Prepare orthographic projections of solids in various orientations. Develop isometric projections and understand basics of Computer Aided Drafting
	5	MECH	MEC 115	Environmental Sciences	
	6	MECH	MEC 116	Engineering Physics Lab	
	7	MECH	MEC 117	Programming with C Lab	Analyze problem solving strategies to solve complex problems. Design algorithms and flow charts to solve problems. Demonstrate and apply, C programming concepts. Develop programs using C to solve real world problems.
	8	MECH	MEC 118	Work Shop	Make different carpentry joints. Make simple fitting jobs. Make jobs like funnel, elbow etc. using sheet metal. Apply basic electrical engineering knowledge for house wiring practice like stair case wiring, series and parallel connections.
	9	MECH	MEC121	Engineering Mathematics II	
	10	MECH	MEC122	Engineering Chemistry	
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11	MECH	MEC123	Professional Ethics & Human Values	
12	MECH	MEC124	Applied Physics	
13	MECH	MEC125	Advanced Engineering Drawing	Prepare orthographic projections for sections of solids. Prepare the development of surface for solids. Prepare orthographic projections for intersections of solids. Convert & draw isometric projections into orthographic projections and vice-versa. Develop 2-D and 3-D models using Auto-CAD.
14	MECH	MEC126	Engineering Chemistry Lab	
15	MECH	MEC127	Language Lab	
16	MECH	MEC128	Object oriented Programming with C++ Lab	Illustrate the concept of OOP paradigm using class, object, data and functions. (Apply) Design CPP programs to implement OOP Concepts such as function overloading, operator overloading, Inheritance, virtual functions and polymorphism.
17	MECH	MEC211	M3	Apply gradient, divergence & curl to scalar and vector point functions and also physically interpret their meaning. Apply the concepts of Vector calculus & the corresponding theorems to evaluate line, surface and flux integrals. Solve both first & higher order partial differential equations by different techniques Apply the method of separation of variables to solve the one & two dimensional heat conduction equations and also equations pertaining to the vibrations of a string. Apply the principles of Fourier transforms to Boundary value problems.
18	MECH	MEC212	MMS	Analyse the fundamental structures of materials and their properties. Identify various phases of alloys accompanied with various heat treatment methods. Classify & explain various properties and applications of ferrous and nonferrous alloys. Analyze the failure of the given component using failure mechanisms. Identify & synthesize the composite material and explain the principles of powder Metallurgy components.
				Determine the resultant force for the given coplanar and non- coplanar force systems. Determine the forces in the given 2D-trusses using the method of joints and sections; and calculate the forces required to keep the given body in equilibrium by considering friction.

19	MECH	MEC213	EM	Calculate the centroid and moment of inertia of the plane surfaces including composite areas and also determine the mass moment of inertia for the given solid. Determine the kinematic and kinetic parameters of the given particle under rectilinear and curvilinear translations; and calculate the velocities of bodies under collision. Determine the kinematic and kinetic parameters of the given rigid bodies under rectilinear and curvilinear translations and also calculate the time period of Simple & compound pendulum.
20	MECH	MEC214	MOS	Determine the principal stresses and strains on an oblique plane for a given structure/mechanical components under complex loading conditions Evaluate the effect of shear force and bending moment on various beams for all types of loading to determine bending stress and shear stresses. Evaluate the slope and deflection induced in the beams by using Double integration, Macualay's and Moment Area method. Determine the torsional stresses in shafts and further estimate the crippling loads in short and long columns under both direct and eccentric loading. Evaluate the hoop and longitudinal stresses in thin and thick cylinders due to internal and external pressures.
21	MECH	MEC215	ETD I	Classify thermodynamic systems & analyse the interaction between system & surroundings Apply the laws of thermodynamics to both flow & non flow process and evaluate the energy interactions between system & surroundings Assess the entropy generation & exergy destruction in a thermodynamic process. Evaluate the properties of a gas mixture and further apply thermodynamic laws to compute the change in properties of a system undergoing a thermodynamic process. Analyse the performance of air standard cycles.
22	MECH	MEC216	MFT I	Outline the basic concepts of sand casting technique and analyze the elements of gating system. Differentiate various casting processes and elucidate casting defects through non-destructive methods. Categorize and compare various bulk metal deformation processes. Distinguish various sheet metal operations and explain the fundamental concepts of high energy rate forming processes. Classify different welding processes and further identify the welding defects.
23	MECH	MEC217	SM-LAB	Measure and evaluate tensile and compressive properties of materials using UTM. Utilize torsion tester and spring tester to determine the Modulus of Rigidity of a given material. Experiment with different hardness test rigs to assess the hardness of both ferrous and non-ferrous materials and further determine the impact strength of given material by using Impact Tester. Determine Modulus of Elasticity by conducting deflection test on beams of the given material.
				Draw & Explain the port& valve timing diagram for two stroke and four stroke engines Determine the properties like flash point & fire point, calorific value and viscosity for various fluids by experimentation
24	MECH	MEC218	ME-1-LAB	Calibrate the pressure gauge and justify its correctness. Experiment with single stage reciprocating air compressor to assess its volumetric efficiency

				Experiment with irregular body like connecting rod to determine its centre of gravity & mass moment of inertia
				Classify different boilers, mountings & accessories and
				perceive their principal of operation.
				Evaluate the limit, derivative and integral of complex
				functions
				Formulate the finite difference form of the given
				differential equation in various forms and further use
				different interpolation formulae to find the missing value.
				Apply various numerical methods for solving
25	MECH	MEC221	M-4	differentiation & integration problems.
				Apply probability theorems to evaluate the probability of
				an event and determine the statistical parameters like
				mean, variance etc. in various probability distributions.
				Analyze the Statistical data by using statistical tests (based
				on small sample and largesample) and draw valid
				inferences based on the analysis of statistical data.
				Solve the circuits by using Basic theorems
				Explain the working principles of DC machines and single
			BEEE	phase transformer
26	MECH	MFC222		motor
20	MEGH	MLCZZZ		Elucidate the principles of diodes & transistors & their
				applications
				Explain the working principle of indicating instruments and
				CRO. Apply hydrostatic law for mossuring prossures by using
		MEC223		manometers, determine the hydrostatic force on submerged
	MECH		EM	surfaces and further analyze the stability of floating and
				submerged bodies.
				Analyze the forces acting on a fluid in motion and further apply
				the principles of continuity equation, Impulse momentum and
27				Determine the major and minor losses in flow through closed
				conduits under various configurations and further analyze
				viscous flows
				Explain the boundary layer concepts and further apply the
				flow problems
				Analyze flow over submerged bodies like sphere, cylinder,
				airfoil and evaluate the drag & lift forces exerted on them.
				Identify the kinematic pairs & evaluate the mobility of a planar
				mechanism and further describe the inversions of 4-bar chain,
				Single-slider and double slider crank chains.
				straight line mechanisms, steering mechanisms, copier
				mechanism & Hooke's joint.
				Analyze the given planar mechanism for calculating the
28	MECH	MEC224	TOM-1	kinematic parameters by Instantaneous centre method and
				Relative velocity method.
				follower and determine the kinematic parameters of Tangent
				cams with roller follower and circular arc cam with flat faced
				follower.
				Calculate all the gear parameters related to spur gear, and
				aetermine the speed & torques in epicyclic gear trains using
				Apply the basics of engineering in calculating the cutting
				process parameters, stress, strain, velocities of cutting, shear
				and chip flow and also evaluate the forces in orthogonal cutting
				process.

				Describe the cutting tool geometry, evaluate tool-life, calculate machining time and estimate the cost of machining.
29	MECH	MEC225	MFT II	Compare various machine tools – their kinematic systems and operations and further select a suitable indexing method for gear cutting.
				Categorize the construction and working features of various
				abrasive machine tools and their applications and also further
				Classify and comprehend the various non-traditional machining
				processes and select a suitable process for a given practical
				application.
				Apply the concepts of Engineering drawing to draw
				orthographic and sectional views of mechanical components.
				Drow standard fastaners and select an appropriate fastaner for
				a given application
				Draw and designate appropriate joints, keys and couplings.
30	MECH	MEC226	MD	Build the assembly drawings of machine tools and engine parts
				based on their functionality.
				Evaluate limits, tolerance and judge the type of fit by using both
				shaft base system and hole base system and further create the
				process sheet for manufacturing a component indicating all
				Analyze linear circuits by using network theorem.
				Predict the performance characteristics of DC machines and
31	MECH	MEC227	BEEE-LAB	induction motor
				Predict the regulation of single phase transformer & alternator.
				Perform experimentation on rectifiers and evaluate their
				characteristics.
				Prepare sand mould for different patterns in casting process.
32	MECH	MEC228	MFT-1-LAB	Evaluate the properties of moulding sand to check its
				Gain proficiency in manual arc welding process by fabricating a
				spectrum of weld joints.
				Determine the forces exerted by a jet of fluid on stationary and
				moving vanes of different shapes.
				Distinguish different classes of turbines and further analyze
				Assess the performance of hydraulic turbines
00		1450040	1040	Distinguish between different classes of pumps, their
33	MECH	MEC312	HMS	construction features and further
				Analyze their performance.
				Fundain the coordinate original of continue to deputie excitations
				Explain the working principles of various hydraulic systems,
				hydraulic device for a particular application.
				Identify the phase change process of a pure substance on
				property plots and determine the steam properties using steam
				tables and mollier chart.
				Analyse the working of a simple vapour power cycle and further
				Distinguish the various classes of nozzles and condensers,
34	MECH	MEC313	ETD II	evaluate their performance and further select suitable nozzle or
				condenser for specific application
				Compare the functioning of different classes of steam turbines,
				compounding techniques and also evaluate their performance.
				Distinguish the various refrigeration cycles and analyse their
				performance and further explain the psychrometric terms and
				processes.

35	MECH	MEC314	TOM II	Calculate gyroscopic couple and analyze its effect in aeroplane, ship, two wheelers and four wheelers and design Governors for a specific application. Perform dynamic force analysis of slider crank mechanism and design flywheel for an IC engine. Solve static and dynamic balancing of rotating masses in different planes and further evaluate the balancing forces in single & multi-cylinder engines. Calculate the frequency & amplitude of free, forced and damped vibrations in longitudinal vibration systems. Calculate the natural frequency of free vibrations in transverse and torsional vibration systems including geared systems.
36	MECH	MEC315	DME I	Design a competitive product by following all the design considerations. Analyze the types of failure and design the geometrical dimensions of the component based on the various criteria of the design against static and fluctuating loads. Design threaded and welded joints, subjected to Eccentric & fluctuating loads. Design shafts, keys and couplings subjected to static and dynamic loads. Design springs subjected to static and dynamic loads.
37	MECH	MEC316	FM-LAB	Infer the veracity of Bernoulli's theorem by experimentation. Calibrate flow measuring devices such as venturimeter, orifice meter, orifice plate and V-notch. Experiment with flow through pipes to assess the major and minor losses. Determine the force exerted by a jet of fluid on vanes of different shapes by experimentation and further compare with theoretical values. Predict the performance characteristics of different classes of turbines and pumps through experiments.
38	MECH	MEC317	MFT-II-LAB	Perform facing, turning, taper turning, knurling, forming and thread cutting operations on the given work-piece and also generate tool geometry (tool angles) on a tool blank using lathe. Generate chips through machining processes and analyze their characteristics by varying the machining parameters on various work-piece materials. Analyze the cutting forces experienced by the cutting tool for varying cutting parameters in machine tools (lathe, drilling and milling machines). Measure and analyze the cutting tool temperature and shear angle of the given cutting tool for various cutting parameters in lathe and shaping machines.
39	MECH	MEC318	SOFTSKILLS LAB	
40	MECH	MEC319	VERBAL & QUANTITATIVE APTITUDE-I	
41	MECH	MEC321	MFT III	Identify, distinguish & analyze the principles of various automation techniques that can be applied to machine tools like Numerical Control(NC), Computer Numerical Control(CNC) and Direct Numerical Control(DNC) Develop program for simple contours using Manual and Automated Programmable Tool (APT) methods Select suitable measuring instruments for linear and angular measurements and explain their construction, working principles and uses.

				Select suitable method and accordingly calculate various
				parameters of spur gears and screw threads.
				Apply different methods to calculate average surface roughness
				and select suitable tests to check the alignment of lathe, radial
				drilling and milling machines.
				Apply functions and principles of management to multi-
				Employ the techniques of production planning and control to
				manage production operations
				Apply work measurement techniques and method study
42	MECH	MEC322	IFM	procedures for productivity improvement
				Analyse the selection of material handling equipment &
				purchasing techniques and explain factories act, 1948 &
				industrial disputes act, 1947.
				Evaluate quality of product using statistical process control
				charts and acceptance sampling plans.
				Design the various types of gears based on static and dynamic
				Loads
				Design the various IC engine components (connecting rod,
				crankshaft, cylinder & Piston) subjected to combined loads and
43	MECH	MEC323	DME II	design frictional clutches based on uniform pressure and wear
				Ineory.
				Design various types of brakes, crane nooks & wire ropes.
				dynamic loads
				Design belt and chain drives for power transmission
				Distinguish between different classes of IC Engines and further
				evaluate their performance
				Compare & analyze the air standard, fuel-air and actual cycles.
11	MECH	MEC324		Explain the combustion phenomenon in S.I & C.I engines and
	MEGH	WILC324		further analyse the effect of engine parameters on it.
				Distinguish various classes of compressors, evaluate their
				performance and interpret their characteristics.
				Categorise the gas turbine plants and analyse the different
				methods for improving their performance.
				contracte a linear programming problem and choose an
				Assess the minimum cost through transportation models and
				obtain the optimum solution by using MODI method and further
				estimate the maximum price or minimum cost.
				Apply the concepts of PERT/CPM for decision making and
45	MECH	MEC325	OR	computing the scheduled time of completion of a project.
				Apply the various replacement models and sequencing models
				to compute optimum replacement period and optimum Job
				sequencing.
				Classify the inventory models and apply them in inventory
				management and turther use Queuing models to estimate the
				Explain the functioning of various integral agations in steam
				nower plant and accessories
				Analyze the working of various accessory systems in tandem
				with internal combustion engine power plant and further explain
				the operation of different configurations of gas turbine power
46	MECH	MEC326	PPE	plant.
				Comprehend different components of hydroelectric power plant
				and evaluate rainfall and run-off estimation
				Explain the functioning of various integral sections in nuclear
				power plant and further classify reactors.
				Analyze power plant economics and evaluate power tariff.
				Calibrate the given measuring instruments (Vernier calliper,
				Measure the angle of a given specimen by using universal
				bevel protractor and taper anale of a bar by using universal
				slip gauges.
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47	MECH	MEC327	M&M LAB	Determine the angle of the given V-groove and Gear tooth parameters of the given spur gear by using Vernier height gauge & Vernier calliper. Check the concentricity and roundness of the given spigot by using a dial gauge, check the flatness of the given surface and determine the central distance between two holes in a template using Vernier height gauge. Explain the various components of PLC and sensor kit & develop ladder logic programme in PLC for various practical applications (burglar alarm, Traffic signal, Belt Conveyer, Lift and Pneumatic operations).
48	MECH	MEC328	ME-II-LAB	Experiment with I.C Engines to evaluate their performance Experiment with two stage Air compressor and test for its efficiencies Estimate actual & theoretical COP's of VCRS by experimentation Compare the graphical and analytical methods used for kinematic analysis of simple mechanisms Make use of a gyroscopic model to compare the theoretical and experimental gyroscopic couples
49	MECH	MEC329	VERBAL & QUANTITATIVE APTITUDE-II	
50	MECH	MEC412	MEFA	Differentiate micro vs macro economics and apply the concepts of demand analysis & demand forecasting Explain the cost concepts and types of costs and further evaluate Break-even point. Identify classes of market structures, business organizations and phases of business cycles Differentiate fixed and working capital and Explain the methods and sources of finance. Prepare balance sheet of abusiness organization with sole proprietor.
51	MECH	MEC413	HT	Analyze and evaluate the heat transfer rate in 1D Steady state heat transfer applications. Assess the temperature distribution and evaluate effectiveness and fin efficiency for different cross-sections and further determine temperature distribution in bodies of regular cross-sections under un-steady state heat transfer condition. Explain the mechanisms of convection, significance of non-dimensional numbers and apply suitable correlations for evaluating the heat transfer coefficients in different flows under free and forced convection. Explain the regimes of pool boiling, flow boiling, types of condensation and determine the heat transfer rates and areas in heat exchangers. Elucidate the laws governing radiation heat transfer, evaluate the radiation properties and determine the heat exchange by radiation between bodies.
52	MECH	MEC414	CAD	Explain the usage of computer peripherals and Graphic display devices. Develop database for wire-frame model and design tree for solid model. Apply various FEM packages for solving problems in mechanical engineering. Write the algorithms for solving mechanical design problems. Apply the technique of Artificial Intelligence to design problems.
				Analyze springs and bar problems using Rayleigh-Ritz and Galerkins methods, compare and contrast FEM with other analytical methods and explain the steps involved in FEM.

				Analyze one dimensional bar problems using FEM.
53	MECH	MEC415	FEA	Analyze plane truss and beam problems using FEM.
				Analyze two dimensional structural problems using CST and
				Axi-symmetric elements.
				Analyze one dimensional steady state problems in Heat
				transfer using FEM.
				Compare the various refrigeration systems, their applications
				and further analyse aircraft refrigeration systems.
				Analyse the working principles of Vapour Compression
				Retrigeration Systems (VCRS) and the methods of improving
54	МЕСЦ		PRAC	Inell performance.
54	WEON	WILC410-1	Nano	explain the working principles of Evaporators & Evaposion
				devices
				Explain the functioning of vapour absorption refrigeration
				systems (VARS) and further compare VARS & VCRS.
				Apply the Psychrometry principles for estimating the air-
				conditioning loads in various applications.
				Categorize automobiles and describe the constructional
				features of engine parts.
				Examine the operational features of various systems of
		MEC416-		engines used in an automobile.
55	MECH		AE	Explain various transmission systems of an automobile.
				Describe & distinguish various suspension systems, steering
				systems & brake systems of an automobile.
				Illustrate the principles related to electrical and electronic
				Systems used in an automobile.
				powder/a given metal by experimentation
				Determine the heat transfer coefficient of air in free and forced
	MECH	MEC417	HT Lab	convection by experimentation and compare these with
56				theoretical values.
	_	_		Conduct experiment in unsteady heat transfer to verify lumped
				system analysis.
				Experimentally determine the Stefan-Boltzmann constant and
				emissivity of a grey body.
				Draw two dimensional views of any mechanical component
				using Auto CAD software.
				Create three dimensional part models and assemblies of
				machine components using Solidworks software.
57		MEC449	CADLah	Evaluate the stresses in 2D beams and trusses in static
57				Determine the stresses in 3D Components using Solidworks
				software
				Develop and execute programs for CNC Machine, further
				perform material handling operation using "Pick and Place"
				ROBOT.
58	MECH	MEC419	Industrial visit	
				Explain the basic principles & performance characteristics of
				measurement and also select a suitable displacement
				Explain the basic principles, working, advantages,
				disadvantages and applications of temperature and pressure
				measuring devices and select a suitable pressure &
				temperature measuring instrument for a given
				application/experimentation.

59	MECH	MEC421	ICS	Comprehend the basic principles, working, advantages, disadvantages and applications of level, flow, speed, acceleration and vibration measuring instruments and also select a suitable instrument for a given application/experimentation. Describe the basic principles, working, advantages, disadvantages and applications of stress strain, humidity, force, torque and power measuring instruments and also select a suitable instrument for a given application/experimentation. Explain the basic principles, working, advantages, disadvantages and applications of various control systems for
				measuring instruments. Distinguish various renewable energy sources & calculate solar
60	MECH	MEC422	NCSE	variables by applying the principles of solar radiation Classify solar collectors, solar storage systems & explain the various solar photovoltaic systems Evaluate the performance characteristics of wind generators and classify the bio-gas plants. Elucidate the working principles of OTEC, tidal power generation & geothermal power plants. Illustrate the principle and importance of Direct energy conversion devices (MHD & Fuel cells).
61	MECH	MEC423	PROJECT	