AALIM MUHAMMED SALEGH COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

CO-PO MAPPING (R-2017)

S.NO	SEM/YEAR	SUBJECT NAME	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	I/I	Communicative English (HS8151)	Read articles of a general kind in magazines and newspapers.	0	1	1	2	0	1	1	0	3	3	1	2	2	3
			Participate effectively in informal conversations; introduce themselves and	0	2	1	1	1	1	2	1	3	3	1	3	3	2
			Comprehend conversations and short talks delivered in English	0	1	2	1	2	1	1	0	3	3	0	3	2	3
			Write short essays of a general kind and personal letters and emails in	0	2	1	2	1	1	2	2	3	3	1	2	3	3
			Expand the rhetorical skills appropriate to the Engineering curriculam.	0	3	1	2	1	1	1	2	3	3	1	3	2	3
2	I/I	Engineering Mathematics – I(MA8151)	USE BOTH LIMITS OF definitions&rules of differentiation,maxima and	3	3	1	3	0	1	0	0	1	0	1	2	3	3
			maxima and minima of multiple variables	3	2	1	3	0	2	1	0	1	1	2	1	3	3
			integrals, techniques of integration,substitution,partial fractions,parts method	3	2	1	3	0	2	1	0	1	1	2	3	3	3
			COMPUTE MULTIPLE INTEGRALS,AREA,VOLUME,POLAR,CHANGE	3	2	1	3	0	3	1	0	1	1	3	2	3	3
			techniques in solving DE	3	2	1	3	0	3	2	0	1	1	3	3	3	3
3	I/I	Engineering Physics(PH8151)	Are you acquired the knowledge on the basics of properties of matter and its	3	3	3	3	2	3	3	1	1	0	0	1	3	1
			Whether you understood the concept of waves and optical devices and their	3	2	2	1	1	2	0	2	1	2	0	2	2	1
			Have you understood the concepts of thermal properties of materials and their	3	2	2	3	1	2	1	1	1	0	0	2	3	2
			whether you understood the concepts of quantum theory and its applications ?	3	2	1	2	2	3	2	2	2	1	0	2	2	1
			Have you understood the basics of crystal physics and its growth techniques?	3	3	3	2	2	1	2	1	2	1	0	2	3	1
4	I/I	Engineering Chemistry(CY8151)	the knowledge in water treatment process	3	1	3	3	0	2	0	1	2	2	1	2	3	0
			understood the concept of catalytic converter	3	1	2	0	0	0	1	0	1	1	0	1	0	0
			to construct a new phase diagram and develop new alloy	3	3	2	3	1	3	0	0	1	1	0	2	0	0
			devise a new innovative technique for efficient usage of fuel	3	3	1	1	1	1	2	0	1	1	1	3	0	0
			the skills to fabricate energy storage devices	3	0	3	2	1	2	2	0	3	2	1	3	0	3
5	I/I	Problem Solving and Python Programming(GE8151)	Are you able to develop algorithmic solutions to simple computational	3	3	0	0	0	0	0	0	0	0	0	0	3	1
			Are you able to develop and execute simple Python programs using	0	3	3	0	2	0	0	0	0	0	0	0	3	1
			Can you Decompose a Python program into functions?	0	3	0	0	1	0	0	0	0	0	0	0	3	1
			Are you able to represent compound data using Python lists, tuples,	3	3	0	0	1	0	0	0	0	0	0	0	2	1
			Can you read and write data from to files in Python programs?	0	3	0	1	2	0	0	0	0	0	0	0	3	1
6	I/I	Engineering Graphics(GE8152)	Understanding the fundamentals and standards of engineering graphics?	3	3	2	1	2	2	1	0	0	0	0	3	2	3
			Have you knew the freehand sketching of basic geometrical constructions and	3	3	2	1	2	2	1	0	0	0	0	3	2	3
			Did you understood the projections of lines and plane surfaces?	3	3	2	1	3	2	1	0	0	0	0	3	2	3
			Whether you understood the projections of solids and development of	3	3	2	1	3	2	1	0	0	0	0	3	2	3
			Did you understood the visualization of the isometric projections and	3	3	2	1	3	2	1	0	0	0	0	3	2	3
7	I/I	Problem Solving and Python Programming Laboratory(GE8161)	Write, test, and debug simple Python programs	3	3	3	3	3	1	1	0	2	2	3	0	3	3
			Implement Python programs with conditionals and loops	3	3	3	3	3	1	1	0	2	2	3	0	3	3
			Develop Python programs step-wise by defining functions and calling them.	3	3	3	3	3	1	1	0	2	2	3	0	3	3
			Use Python lists, tuples, dictionaries for representing compound data.	3	3	3	3	3	1	1	0	2	2	3	0	3	3
			Read and write data from/to files in Python	3	3	3	3	3	1	1	0	2	2	3	0	3	3
		Physics and Chemistry	Whether you have understood the concepts of elastic properies of matter	3	3	2	2	2	3	3	1	2	2	2	2	2	2
			Are you gained Practical knowledge about heat and thermal radiation?	3	3	2	2	2	3	2	1	2	2	1	2	2	2

S.No	Sem	Subject	Course Outcome														
8	I/I	Chemistry Laboratory(BS8161)	Are you gained Practical knowledge about optics and its applications?	3	3	3	2	3	3	2	2	2	3	2	3	2	2
			Whether you learnt Practical knowledge about treament of water?	2	2	2	2	2	2	2	1	1	1	1	2	2	2
			Did you understood the Practical knowledge about electro-chemistry?	3	3	2	2	1	2	3	1	1	1	1	2	2	2
9	I/II	Technical English(HS8251)	Read technical texts and write area- specific texts effortlessly.	0	1	1	1	1	1	1	1	3	3	0	3	3	1
			Listen and comprehend lectures and talks in their area of specialisation	0	2	1	2	2	1	2	1	3	3	0	3	3	1
			Speak appropriately and effectively in varied formal and informal contexts.	0	1	1	1	1	1	1	2	3	3	0	3	3	2
			Write reports and winning job applications.	0	1	1	2	1	1	1	2	3	3	0	3	2	2
			write letter,reports,proposals for various job oppurtunities.	0	1	1	2	1	1	1	3	3	3	1	2	3	3
10	I/II	Engineering Mathematics – II(MA8251)	EIGENVALUES AND EIGEN VECTORS, DIAGNOLISATION OF	3	3	3	3	1	1	1	1	1	1	2	3	3	3
			GRADIENT,DIVERGENCE ,CURL OF A VECTOR	2	2	1	2	1	1	1	0	1	2	2	2	3	3
			ANALYTIC FUNCTIONS AND CONFORMAL MAPPING	3	3	3	3	1	2	1	0	1	2	3	2	3	3
			COMPLEX INTEGRATIONS	3	3	2	1	0	1	1	0	1	2	1	2	3	3
			LAPLACE TRANSFORMTO SIMPLE FUNCTIONS AND SOLVING ODE	3	3	3	3	1	2	1	0	1	2	1	3	3	3
11	I/II	Materials Science(PH8251)	Are you acquired the knowledge of various phase diagrams and their	3	3	3	2	1	1	2	1	1	1	0	2	2	1
			Whether you acquired the knowledge of ferros alloys with various micro	3	3	3	2	2	2	1	2	1	1	0	1	1	2
			Have you understood the mechanical properties of materials and their	3	2	2	2	3	2	2	2	2	1	1	2	2	2
			whether you understood the knowledge on magnetic, dielectric and	3	3	3	3	2	2	2	2	1	2	1	2	2	1
			Have you understood the basics of ceramics, composites and nanomaterials?	3	3	3	3	3	2	2	2	1	1	2	2	2	
12	I/II	Basic Electrical, Electronicsand Instrumentation Engineering(BE8253)	understand basic theorem of electric circuits for its applications	3	3	2	2	2	2	2	1	1	2	2	3	1	2
			understand the importance of AC circuits which plays a vital role in	3	3	2	2	1	2	1	1	1	2	1	3	1	1
			the knowledge of DC machines, Transformer, single and three phase induction	3	3	3	2	2	2	2	1	1	2	2	3	1	2
			understand the basic principles of converters and DAC / ADC plays a vital	2	2	2	2	3	2	2	1	1	1	2	3	1	2
			understand the basic principle of all electrical and electronics concepts	2	1	2	2	2	2	2	1	1	1	2	3	1	1
13	I/II	Environmental Science and Engineering(GE8291)	Have you obtained the knowledge on scope and importance of Environmental	3	0	0	2	1	2	3	3	2	2	2	3	0	0
			Do you gained the knowledge on various Pollution and its mitigation measures	3	2	3	2	1	2	3	1	2	2	2	3	3	0
			Have you acquired ability to conserve the various natural resources.	3	1	2	1	0	1	3	2	1	1	1	3	0	0
			Have you gained the skills to manage the environmental issues and to follow	3	3	3	2	0	1	3	1	1	2	1	3	0	0
			Can you assess the impacts of population growth in environment and human	3	3	3	0	3	3	1	0	2	2	2	3	0	3
14	I/II	Engineering Mechanics(GE8292)	illustrate the vectorial and scalar representation of forces and moments	3	2	2	0	0	2	0	0	2	0	2	2	3	2
			analyse the rigid body in equilibrium	3	3	2	1	0	2	1	0	2	1	2	2	3	3
			evaluate the properties of surfaces and solids	3	3	2	1	0	0	0	0	2	0	2	2	2	2
			calculate dynamic forces exerted in rigid body	3	2	1	1	0	0	1	0	2	2	0	2	3	2
			determine the friction and the effects by the laws of friction	3	1	1	2	0	0	1	0	2	0	2	2	3	2
15	I/II	Engineering Practices Laboratory(GE8261)	fabricate carpentry components and pipe connections including plumbing	3	3	3	3	3	3	1	1	3	3	1	3	3	2
			use welding equipments to join the structures.	3	3	3	3	2	3	2	1	3	3	1	3	3	2
			Carry out the basic machining operations	3	3	3	3	2	3	2	1	3	3	1	3	3	2
			Make the models using sheet metal works	3	3	3	3	2	3	2	1	3	3	1	3	3	2
			Illustrate on centrifugal pump, Air conditioner, operations of smithy,	3	3	3	3	2	3	2	1	3	3	1	3	3	2
16	I/II	Basic Electrical, Electronics Engineering Laboratory(BE8261)	Ability to understand the different types of AC and DC electrical drives	3	3	2	2	2	2	2	1	1	2	2	3	2	3
			Ability to determine the speed characteristics of different electrical machines.	3	2	3	3	2	2	2	1	1	2	1	3	3	2
			Ability to design simple circuits involving diodes and transistors.	3	3	2	2	2	1	1	1	2	2	2	3	3	2
			Ability to understand the application of circuits involving diodes and	3	3	3	3	3	2	1	1	2	2	3	2	2	
			Ability to use operational amplifiers	3	2	3	2	2	1	2	1	1	2	2	3	2	3
		Transforms and	Understand how to solve the given standard partial differential equations.	3	3	3	3	0	0	0	0	0	0	0	3	2	2

No	Year/Sem	Course	Course Outcome														
17	II/ III	Transforms and Partial DifferentialEquati ons(MA8353)	Solve differential equations using Fourier series analysis which plays a vital	3	3	3	3	0	0	0	0	0	0	0	3	2	2
			Appreciate the physical significance of Fourier series techniques in solving one	3	3	3	3	0	0	0	0	0	0	0	3	2	2
			Understand the mathematical principles on transforms and partial differential	3	3	3	3	0	0	0	0	0	0	0	3	2	2
			Use the effective mathematical tools for the solutions of partial differential	3	3	3	3	0	0	0	0	0	0	0	3	2	2
18	II/ III	Engineering Thermodynamics(ME8391)	Apply the first law of thermodynamics for simple open and closed systems	3	3	3	3	0	0	0	0	0	0	0	3	2	2
			Apply second law of thermodynamics to open and closed systems and calculate	2	1	1	2	1	1	2	0	1	0	0	3	2	2
			Apply Rankine cycle to steam power plant and compare few cycle	2	2	1	2	1	1	2	0	1	0	0	3	2	2
			Derive simple thermodynamic relations of ideal and real gases	2	2	1	3	1	1	2	0	1	0	0	3	2	2
			Calculate the properties of gas mixtures and moist air and its use in	2	2	1	3	0	1	2	0	1	0	0	3	2	2
19	II/ III	Fluid Mechanics and Machinery(CE839 4)	Apply mathematical knowledge to predict the properties and characteristics of	3	3	3	3	0	0	3	0	0	0	0	0	2	2
			Can analyse and calculate major and minor losses associated with pipe flow in	3	3	0	3	0	0	0	0	0	0	0	0	2	2
			Can mathematically predict the nature of physical quantities	3	3	3	3	0	3	0	0	2	0	0	0	2	2
			Can critically analyse the performance of pumps	2	3	3	0	0	3	0	0	0	0	0	0	2	2
			Can critically analyse the performance of turbines.	2	3	3	0	0	3	0	0	0	0	0	0	2	2
20	II/ III	Manufacturing Technology – I(ME8351)	Explain different metal casting processes, associated defects, merits and	3	1	3	3	3	3	3	0	0	0	0	3	3	3
			Compare different metal joining processes.	3	2	3	3	3	3	3	0	2	0	0	3	3	3
			Summarize various hot working and cold working methods of metals.	3	2	3	3	3	3	3	0	2	0	0	3	3	3
			Explain various sheet metal making processes.	3	2	3	3	3	3	3	0	2	0	0	3	3	3
			Distinguish various methods of manufacturing plastic components	3	2	3	3	3	3	3	0	0	0	0	3	3	3
21	II/ III	Electrical Drives and Controls(EE8353)	Understand the basic concepts of different types of electrical machines and	3	3	3	0	0	0	3	0	3	0	0	0	1	2
			Knowledge about D.C motors and induction motor	3	3	3	0	0	0	3	0	3	0	0	0	1	2
			Knowledge about the conventional and solid-state drives	2	3	2	0	0	0	2	0	2	0	0	0	2	2
			Understand the conventional and solid state speed control of D.C drives	3	2	3	0	0	0	3	0	3	0	0	0	2	2
			Understand the conventional and solid state speed control of A.C drives	3	2	2	0	0	0	3	0	3	0	0	0	2	2
22	II/ III	Manufacturing Technology Laboratory – I(ME8361)	Demonstrate the safety precautions exercised in the mechanical workshop	3	2	3	1	1	1	1	1	1	1	1	3	3	3
			Make the workpiece as per given shape and size using Lathe.	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			Join two metals using arc welding	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			Use sheet metal fabrication tools and make simple tray and funnel.	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			Use different moulding tools, patterns and prepare sand moulds.	3	2	3	1	2	1	2	1	1	1	2	3	3	3
23	II/ III	Computer Aided Machine Drawing(ME8381)	Follow the drawing standards, Fits and Tolerances	3	2	3	0	3	0	0	0	0	2	3	3	2	2
			Re-create part drawingsas per the specified standards	3	2	3	0	3	0	0	0	0	2	3	3	2	2
			create Sectional views as per the specified standards	3	2	3	0	3	0	0	0	0	2	3	3	2	2
			create Solid Models as per the specified dimensions	3	2	3	0	3	0	0	0	0	2	3	3	2	2
			create Assembly drawing as per the specified standards	3	2	3	0	3	0	0	0	0	2	3	3	2	2
24	II/ III	Electrical Engineering Laboratory(EE83 61)	to perform speed characteristic of DC shunt and series motor	3	3	3	3	2	3	3	2	3	2	1	3	1	1
			to perform speed characteristic of DC shunt motor and DC shunt and series	3	3	1	3	1	3	1	3	1	1	2	3	1	2
			to perform speed characteristic of single phase transformer	2	3	1	3	1	1	2	1	3	2	1	2	1	3
			to perform speed characteristic of 3 phase alternator and synchronous motor	1	3	3	2	2	1	2	1	3	1	3	1	1	2
			to perform speed characteristic of 3phase Squirrel cage and Slip ring	2	1	3	2	1	3	3	2	1	1	3	2	1	1
25	II/ III	Interpersonal Skills / Listening &Speaking(HS838 1)	Listen and respond appropriately.	2	1	1	1	1	1	1	1	3	3	0	3	3	1
			Participate in group discussions	2	2	1	2	2	1	2	1	3	3	0	3	3	1
			Make effective presentations	2	1	1	1	1	1	1	2	3	3	0	3	3	2
			Participate confidently and appropriately in conversations both formal and	2	1	1	2	1	1	1	2	3	3	0	3	2	2
			Confidence in participating in formal and informal conversations	2	1	1	2	1	1	1	3	3	3	1	2	3	3

No	Yr/Sem	Course	Course Outcome														
26	II/ IV	Statistics and Numerical Methods(MA8452)	Apply the concept of testing of hypothesis for small and large samples in real	3	3	3	3	2	3	1	0	1	0	3	3	3	3
			Apply the basic concepts of classifications of design of experiments in the field	3	3	3	3	2	3	1	0	2	0	3	3	3	3
			Appreciate the numerical techniques of interpolation in various intervals and	3	3	3	3	1	2	0	0	0	0	2	1	3	3
			Understand the knowledge of various techniques and methods for solving first	3	3	3	2	1	1	0	0	0	0	3	2	3	3
			Solve the partial and ordinary differential equations with initial and boundary	3	3	3	3	2	1	0	0	0	0	3	2	3	3
27	II/ IV	Kinematics of Machinery(ME8492)	Discuss the basics of mechanism	3	3	3	3	0	0	0	0	0	1	0	0	3	3
			Calculate velocity and acceleration in simple mechanisms	3	3	3	3	1	0	0	0	0	1	0	2	3	2
			Develop CAM profiles	3	3	3	3	2	0	0	0	0	3	0	2	3	2
			Solve problems on gears and gear trains	3	3	3	3	3	0	0	0	0	1	0	3	3	2
			Examine friction in machine elements	3	3	3	3	3	0	0	0	0	1	0	3	3	3
28	II/ IV	Manufacturing Technology – II(ME8451)	Explain the mechanism of material removal processes	3	1	2	1	1	3	3	0	0	1	1	3	3	3
			Describe the constructional and operational features of centre lathe and other	3	2	2	1	1	3	3	0	0	1	1	3	3	3
			Describe the constructional and operational features of shaper, planner,	3	2	3	3	1	3	1	0	2	0	0	3	3	3
			Explain the types of grinding and other super finishing processes apart from	3	2	3	3	1	3	1	0	2	0	0	3	3	3
			Summarize numerical control of machine tools and write a part program.	3	2	3	3	3	3	3	0	0	1	1	3	3	3
29	II/ IV	Engineering Metallurgy(ME8491)	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel	3	2	3	0	0	0	1	0	0	1	0	3	3	3
			Explain isothermal transformation, continuous cooling diagrams and different	3	2	3	0	1	1	2	0	0	1	0	3	3	3
			Clarify the effect of alloying elements on ferrous and non-ferrous metals	3	2	3	0	1	1	2	0	0	1	1	3	3	3
			Summarize the properties and applications of non metallic materials.	3	2	3	0	1	1	2	0	0	1	1	3	3	3
			Explain the testing of mechanical properties. .	3	2	3	1	2	1	2	0	0	1	2	3	3	3
30	II/ IV	Strength of Materials for Mechanical Engineers(CE8395)	Understand the concepts of stress and strain in simple and compound bars, the	3	2	3	3	3	3	1	0	0	0	0	3	3	3
			Understand the load transferring mechanism in beams and stress distribution	3	3	3	3	3	3	1	0	0	0	0	3	3	3
			Apply basic equation of simple torsion in designing of shafts and helical spring	2	3	2	3	3	3	0	0	0	0	1	3	3	3
			Calculate the slope and deflection in beams using different methods.	3	2	3	3	3	3	0	1	1	0	1	3	3	3
			Analyze and design thin and thick shells for the applied internal and external	3	3	3	3	3	3	1	1	1	1	1	3	3	3
31	II/ IV	Thermal Engineering-I(ME8493)	Apply thermodynamic concepts to different air standard cycles and solve	2	2	2	1	0	1	1	0	0	0	0	3	3	3
			Solve problems in single stage and multistage air compressors	2	2	2	2	0	1	1	0	0	0	0	3	3	3
			Explain the functioning and features of IC engines, components and	2	1	2	1	1	1	1	0	0	0	0	3	3	3
			Calculate performance parameters of IC Engines.	2	1	2	2	1	1	1	0	0	0	0	3	3	3
			Explain the flow in Gas turbines and solve problems.	2	2	2	1	2	1	1	1	0	1	3	3	3	3
32	II/ IV	Manufacturing TechnologyLaboratory – II(ME8462)	use different machine tools to manufacturing gears	3	3	3	3	2	3	3	2	3	2	1	3	1	1
			Ability to use different machine tools to manufacturing gears.	3	3	1	3	1	3	1	3	1	1	2	3	1	2
			Ability to use different machine tools for finishing operations	2	3	1	3	1	1	2	1	3	2	1	2	1	3
			Ability to manufacture tools using cutter grinder	1	3	3	2	2	1	2	1	3	1	3	1	1	2
			Develop CNC part programming	2	1	3	2	1	3	1	2	1	1	3	2	1	1
33	II/ IV	Strength of Materials and Fluid Mechanics and Machinery Laboratory(CE8381)	to perform the Tension, Torsion, Hardness, Compression, and Deformation	3	2	3	1	1	1	1	1	1	1	1	3	3	3
			to perform the hardening and tempering test on solid materials	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			to use the measurement equipments for flow measurement	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			to perform different test on pumps	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			to perform different test on turbines	3	2	3	1	2	1	2	1	1	1	2	3	3	3
34	II/ IV	Advanced Reading and Writing(HS8461)	Write different types of essays.	0	1	1	2	0	1	1	0	3	3	1	2	2	3
			Write winning job applications	0	2	1	1	1	1	2	1	3	3	1	3	3	2
			Read and evaluate texts critically.	0	1	2	1	2	1	1	0	3	3	0	3	2	3
			Display critical thinking in various professional contexts.	0	2	1	2	1	1	2	2	3	3	1	2	3	3

S.No	Year/Sem	Course	Course Outcome														
			Enhance the qualities of advanced writing	0	3	1	2	1	1	1	2	3	3	1	3	2	3
35	III/V	Thermal Engineering-II(ME8595)	Solve problems in Steam Nozzle	3	3	3	3	1	0	0	0	0	0	1	3	2	2
			Explain the functioning and features of different types of Boilers and	3	3	3	3	1	0	0	0	0	0	1	3	2	2
			Explain the flow in steam turbines, draw velocity diagrams for steam turbines	3	3	3	3	2	0	0	0	0	0	0	2	3	2
			Summarize the concept of Cogeneration, Working features of Heat pumps and	3	3	3	3	3	0	0	0	0	0	0	3	3	2
			Solve problems using refrigerant table / charts and psychrometric charts	2	3	3	3	3	0	0	0	0	0	0	3	3	2
36	III/V	Design of Machine Elements(ME8593)	Explain the influence of steady and variable stresses in machine component	3	3	3	3	0	0	0	0	0	2	2	1	3	3
			Apply the concepts of design to shafts, keys and couplings.	3	3	3	3	0	0	0	0	0	0	2	2	3	3
			Apply the concepts of design to temporary and permanent joints.	3	3	3	3	0	2	2	0	0	0	2	2	3	3
			Apply the concepts of design to energy absorbing members, connecting rod	3	3	3	3	0	0	0	0	0	0	0	2	3	3
			Apply the concepts of design to bearings.	3	3	3	3	0	0	0	0	0	2	2	2	3	3
37	III/V	Metrology and Measurements(ME8501)	Describe the concepts of measurements to apply in various metrological	3	3	3	2	0	2	0	0	0	2	0	2	2	2
			Outline the principles of linear and angular measurement tools used for	3	3	3	2	0	2	0	0	0	2	0	2	3	2
			Explain the procedure for conducting computer aided inspection	3	3	3	2	0	2	0	0	0	0	0	2	3	2
			Demonstrate the techniques of form measurement used for industrial	3	3	3	2	0	2	0	0	0	0	0	2	3	2
			Discuss various measuring techniques of mechanical properties in industrial	3	3	3	2	0	2	0	0	0	1	0	2	3	2
38	III/V	Dynamics of Machines(ME8594)	Calculate static and dynamic forces of mechanisms	3	3	3	3	0	0	0	0	0	1	0	3	3	2
			Calculate the balancing masses and their locations of reciprocating and	3	3	3	3	0	0	0	0	0	2	0	3	3	2
			Compute the frequency of free vibration.	3	3	1	2	0	0	0	0	0	2	0	3	3	2
			Compute the frequency of forced vibration and damping coefficient.	3	3	1	2	0	0	0	0	0	2	0	3	3	2
			Calculate the speed and lift of the governor and estimate the gyroscopic effect	3	3	3	2	0	0	0	0	0	2	0	3	3	2
39	III/V	Internal combustion engine(OAT552)	Interpret the types of IC engine with components.	3	3	3	2	1	1	2	0	2	1	2	3	3	2
			Infer the working of petrol engine and its parts.	3	3	1	0	0	2	2	0	1	1	2	2	3	2
			Relate the components od diesel engines and its working.	3	2	1	2	0	1	2	0	1	1	2	2	3	2
			Compare the various types of cooling and lubrication systems.	3	3	2	2	0	2	2	0	0	1	2	2	3	2
			Classify and conveys the workingg of GDI, CRDI and HAV.	3	2	2	1	3	2	2	0	0	1	2	2	3	2
40	III/V	Kinematics and Dynamics Laboratory(ME8511)	to explain the gear parameters and kinematics of different mechanisms	3	2	3	1	1	1	1	1	1	1	1	3	3	3
			to perform the test on compound pendulum,bifilar suspension system,spring	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			to perform the governor, gyroscope, cam and whirling speed analysis	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			to do the balancing of rotating and reciprocating masses	3	2	3	1	1	1	2	1	1	1	1	3	3	3
			to perform the vibrating table, turn table and transverse vibration of SSB	3	2	3	1	2	1	2	1	1	1	2	3	3	3
41	III/V	Thermal Engineering Laboratory(ME8512)	conduct tests on heat conduction apparatus and evaluate thermal conductivity	3	3	2	2	1	2	3	0	2	2	2	2	2	3
			conduct tests on natural and forced convective heat transfer apparatus and	3	3	2	2	1	2	3	0	2	2	2	2	2	3
			conduct tests on radiative heat transfer apparatus and evaluate Stefan	3	3	2	2	2	2	1	0	2	2	2	2	2	3
			conduct tests to evaluate the performance of parallel/counter flow heat	3	3	2	2	2	2	1	0	2	2	2	2	2	3
			conduct tests to evaluate the performance of refrigeration and airconditioning	3	3	2	2	2	2	3	0	2	2	2	2	2	3
42	III/V	Metrology and Measurements Laboratory(ME8513)	Have you understood the concepts of measurements to apply in various	3	3	2	2	2	2	3	0	2	2	2	2	2	3
			Have you understood the principles of linear and angular measurements tools	3	2	0	2	2	2	1	1	0	1	1	3	2	3
			Do you know the procedure for conducting computer aided inspection?	3	3	0	2	3	2	1	1	0	1	2	3	2	3
			Have you understood the techniques fo form measurements used for industrial	3	3	0	2	2	2	1	1	0	1	2	3	2	3
			Do you gain the knowledge of various measuring techniques of mechanical	3	3	0	2	2	2	1	1	0	1	2	3	2	3
43	III/VI	Design of Transmission	apply the concepts of design to belts, chains and rope drives.	3	3	3	2	0	1	0	0	0	0	0	2	3	3
			apply the concepts of design to spur, helical gears.	3	3	3	2	0	1	0	0	0	0	0	2	3	3
			apply the concepts of design to worm and bevel gears.	3	3	3	2	0	1	0	0	0	0	0	2	3	3

No	Sem	Course	Course Outcome														
		systems(ME8651)	apply the concepts of design to gear boxes .	3	3	3	2	0	1	0	0	0	0	0	2	3	3
			apply the concepts of design to cams, brakes and clutches	3	3	3	2	0	1	0	0	0	0	0	2	3	3
44	III/VI	Computer Aided Design and Manufacturing(ME8691)	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing	3	3	3	2	2	0	0	0	0	2	0	2	3	3
			Explain the fundamentals of parametric curves, surfaces and Solids	3	3	3	2	2	0	0	0	0	2	0	1	3	3
			Summarize the different types of Standard systems used in CAD	3	3	3	2	2	2	0	2	0	1	0	1	2	2
			Apply NC & CNC programming concepts to develop part programme for	3	3	3	2	3	0	2	0	2	1	2	2	3	3
			Summarize the different types of techniques used in Cellular Manufacturing	3	3	3	2	3	0	2	0	2	1	2	2	3	3
45	III/VI	Heat and Mass Transfer(ME8693)	Apply heat conduction equations to different surface configurations under	3	2	3	2	1	0	1	0	0	0	0	3	2	2
			Apply free and forced convective heat transfer correlations to internal and	3	3	3	2	1	0	1	0	0	0	0	3	2	2
			Explain the phenomena of boiling and condensation, apply LMTD and NTU	3	3	3	2	2	0	1	0	0	0	0	3	2	2
			Explain basic laws for Radiation and apply these principles to radiative heat	3	3	3	2	1	0	1	0	0	0	0	2	1	2
			Apply diffusive and convective mass transfer equations and correlations to	2	3	3	3	1	0	1	0	0	0	2	2	1	2
46	III/VI	Finite Element Analysis(ME8692)	Summarize the basics of finite element formulation	3	3	3	3	0	0	0	0	0	0	0	3	3	3
			Apply finite element formulations to solve one dimensional Problems.	3	3	3	3	0	0	0	0	0	0	0	3	3	2
			Apply finite element formulations to solve two dimensional scalar Problems.	3	3	3	3	0	0	0	0	0	0	0	3	3	2
			Apply finite element method to solve two dimensional Vector problems.	3	3	3	3	0	0	0	0	0	0	0	3	3	2
			Apply finite element method to solve problems on iso parametric element and	2	3	3	3	0	0	0	0	0	0	0	3	3	2
47	III/VI	Hydraulics and Pneumatics(ME8694)	Explain the Fluid power and operation of different types of pumps.	3	2	3	2	0	1	1	0	0	0	0	3	3	3
			Summarize the features and functions of Hydraulic motors, actuators and	3	3	3	2	1	3	2	0	0	0	0	3	3	3
			Explain the different types of Hydraulic circuits and systems	3	3	3	2	1	1	2	0	0	0	0	3	3	3
			Explain the working of different pneumatic circuits and systems	3	3	3	2	2	1	2	0	0	0	0	2	3	3
			Summarize the various trouble shooting methods and applications of	2	3	3	3	0	1	2	0	0	0	0	2	3	3
48	III/VI	Automobile Engineering(ME8091)	recognize the various parts of the automobile and their functions and	3	2	3	2	2	0	2	0	0	1	1	3	3	2
			discuss the engine auxiliary systems and engine emission control.	3	3	1	3	1	3	1	3	1	1	2	3	3	2
			distinguish the working of different types of transmission systems.	2	3	1	3	1	1	1	1	3	2	1	2	3	3
			explain the Steering, Brakes and Suspension Systems.	1	3	3	0	2	1	1	1	3	1	3	1	3	2
			predict possible alternate sources of energy for IC Engines.	2	1	3	2	2	3	3	1	1	1	1	2	3	3
49	III/VI	CAD / CAM Laboratory(ME8681)	Draw 3D and Assembly drawing using CAD software	3	2	3	2	3	0	0	0	0	2	3	3	2	2
			Demonstrate manual part programming with G and M codes using CAM	3	2	3	1	3	0	0	0	0	2	3	3	2	2
			understand the basics of Part Programming	3	2	3	2	3	0	0	0	0	2	3	3	2	2
			simulate a part program with G codes and M codes	3	2	3	2	3	0	0	0	0	2	3	3	2	2
			understand process involved in CAPP	3	2	3	2	3	0	0	0	0	2	3	3	2	2
50	III/VI	Design and Fabrication Project(ME8682)	design and Fabricate the machine element or the mechanical product.	3	3	2	2	3	2	1	2	3	3	3	2	3	3
			demonstrate the working model of the machine element or the mechanical	3	3	3	3	3	1	1	1	1	2	2	3	3	3
			revere the symbiosis of team work	3	3	3	3	2	3	1	2	3	2	2	3	3	3
			awareness about the ethical and environmental effects of your project	3	3	3	3	2	3	1	2	3	2	2	3	3	3
			to know the finance management and documentation of your findings	2	2	2	2	2	1	1	2	2	2	3	3	3	3
51	III/VI	Professional Communication(HS8581)	Make effective presentations	1	1	1	1	2	2	1	2	3	3	1	3	2	2
			Participate confidently in Group Discussions	1	1	1	1	2	2	1	3	3	3	1	3	2	2
			Attend job interviews and be successful in them.	1	1	1	1	2	2	1	2	3	3	1	3	2	2
			Develop adequate Soft Skills required for the workplace	1	1	1	1	2	2	1	2	3	3	1	3	2	2
			awareness about management of time and team	1	1	1	1	2	2	1	3	3	3	2	3	2	2
		Power Plant	Explain the layout, construction and working of the components inside a	3	1	1	1	0	2	2	1	1	1	2	2	3	2
			Explain the layout, construction and working of the components inside a	3	2	1	1	0	2	2	1	1	1	2	2	2	2

No.	Sem	Course	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
52	IV/VII	Engineering(ME8792)	Explain the layout, construction and working of the components inside	3	1	1	1	1	2	2	2	1	1	2	1	3	2
			Explain the layout, construction and working of the components inside	3	2	2	1	0	2	2	1	1	1	2	2	2	2
			Explain the applications of power plants while extend their knowledge to	3	2	2	1	1	2	3	2	1	1	2	2	3	2
53	IV/VII	Process Planning and Cost Estimation(ME8793)	select the process, equipment and tools for various industrial products.	3	3	1	2	1	1	1	1	1	1	1	1	1	3
			prepare process planning activity chart.	2	2	2	2	1	1	1	1	1	1	1	1	1	2
			explain the concept of cost estimation.	3	3	2	2	2	1	1	1	1	1	2	1	1	2
			compute the job order cost for different type of shop floor.	3	3	2	2	1	1	1	1	1	1	2	1	2	2
			calculate the machining time for various machining operations.	3	3	2	2	1	1	1	1	1	1	1	1	2	2
54	IV/VII	Mechatronics (ME8791)	Discuss the interdisciplinary applications of Electronics, Electrical,	3	3	3	2	1	0	0	0	0	0	1	3	3	3
			Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram,	3	3	3	2	2	0	0	0	0	0	0	3	3	3
			Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and	3	3	3	2	1	0	0	0	0	0	1	3	3	3
			Explain the architecture, programming and application of programmable	3	3	3	2	1	0	0	0	0	0	0	3	3	3
			Discuss various Actuators and Mechatronics system using the knowledge and	3	3	3	2	2	0	0	0	0	0	1	3	3	3
55	IV/VII	Testing of materials(OML751)	the knowledge of suitable techniques to inspect industrial component	3	3	0	0	0	2	2	2	0	1	3	3	3	3
			to identify the use of different techniques and its applications	3	3	0	0	0	2	2	1	1	1	2	3	3	3
			the knowledge of classification,comparison and working of	3	3	0	3	2	2	0	1	1	1	3	3	3	3
			to examine the applicability of TEM,SEM and OM	3	3	0	3	2	2	0	1	1	1	3	3	3	3
			the classification,comparison and working of thermal,dynamic and plasma	3	3	0	3	2	2	0	1	1	1	3	3	3	3
56	IV/VII	Non Destructive Testing and Evaluation(ME8097)	Explain the fundamental concepts of NDT	3	3	0	0	0	1	2	1	1	0	0	3	3	3
			Discuss the different methods of NDE	3	3	0	0	0	1	3	2	2	0	0	3	3	3
			Explain the concept of Thermography and Eddy current testing	3	3	0	2	3	1	3	2	2	0	0	3	3	3
			Explain the concept of Ultrasonic Testing and Acoustic Emission	3	3	0	3	3	1	3	2	2	0	0	3	3	3
			Explain the concept of Radiography	3	3	0	3	3	1	1	2	2	0	0	3	3	3
57	IV/VII	Unconventional Machining Processes(ME8073)	Explain the need for unconventional machining processes and its classification	3	3	3	3	1	2	2	1	1	2	1	3	3	3
			Compare various thermal energy and electrical energy based unconventional	3	3	3	3	2	2	2	1	1	1	3	3	3	3
			Summarize various chemical and electro-chemical energy based	3	3	3	3	1	2	2	1	1	1	3	3	3	3
			Explain various nano abrasives based unconventional machining processes.	3	3	3	3	1	2	2	1	1	1	3	3	3	3
			Distinguish various recent trends based unconventional machining processes.	3	3	3	3	1	2	2	1	1	1	3	3	3	3
58	IV/VII	Simulation and Analysis Laboratory(ME8711)	simulate the working principle of air conditioning system, hydraulic and	3	3	3	3	2	3	1	2	3	2	1	3	1	1
			analyze the stresses and strains induced in plates, brackets and beams and	3	3	1	3	3	1	3	1	1	2	3	3	1	2
			calculate the natural frequency and mode shape analysis of 2D components	2	3	1	3	1	1	2	1	3	2	1	2	1	3
			understood the dynamic analysis in software	1	3	3	2	2	1	2	1	3	1	3	1	1	2
			programming for simulation purpose.	2	1	3	2	1	3	1	2	1	1	3	2	1	1
59	IV/VII	Mechatronics Laboratory(ME8781)	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic	3	3	3	3	2	3	1	2	3	2	1	3	3	2
			Demonstrate the functioning of control systems with the help of PLC and microcontroller	3	3	1	3	2	3	1	3	1	1	2	3	2	3
			understood the automated controlling systems	2	3	1	3	2	1	2	1	3	2	1	3	3	2
			understood the pneumatics and hydraulics working and control	1	3	3	2	2	1	2	1	3	1	3	3	2	3
			Did you experimented the image processing and advanced tools	3	2	3	2	3	3	1	2	1	1	3	3	3	2
60	IV/VII	Technical Seminar(ME8712)	understood the previous literature and its problem statements	3	3	2	2	3	2	1	2	3	3	3	2	3	3
			applied the latest technological methods in your project	3	3	3	3	3	1	1	1	1	2	2	3	3	3
			revere the symbiosis of team work	3	3	3	3	2	3	3	2	3	2	2	3	3	3
			awareness about the ethical and environmental effects of your project	3	3	3	3	2	3	3	2	3	2	2	3	3	3
			know the finance management and documentation of your findings	2	2	2	2	2	1	1	2	2	2	3	3	3	3
			knowledge of management and organization,managerial roles and	0	0	0	0	0	2	0	3	1	0	2	3	3	2

61	IV/VIII	Principles of Management(MG 8591)	the nature,purpose,types,steps and various tools in planning	0	0	0	0	0	1	0	3	1	0	3	3	3	2
			the nature,purpose,types,structure of organising,HR	1	0	0	0	0	2	0	3	2	0	3	3	3	2
			the knowledge about the activities of directing(behaviour,motivation types and	1	0	0	0	0	3	0	3	1	0	2	3	3	2
			prepare the budgetary control techniques and various controlling activities	1	0	0	0	0	2	0	2	1	0	3	3	3	2
62	IV/VIII	Production Planning and Control(IE8693)	the knowledge of various aspects in product development and its design	3	2	1	1	0	0	0	0	0	0	2	3	3	3
			to prepare production planning and control activities such as work	3	3	1	3	0	0	0	0	0	0	2	3	2	3
			the knowledge of various activities in process and production planning	3	3	2	3	0	0	0	0	0	0	2	3	2	3
			the concepts of production scheduling,product sequencing,MRP	3	3	2	3	0	0	0	0	0	0	2	3	2	3
			the knowledge of inventory control and recent trends in production planning	3	3	2	3	0	0	0	0	0	0	2	3	2	3
63	IV/VIII	Project Work(ME8811)	Did you understood the previous literature and its problem statements	3	3	2	2	3	2	1	1	2	3	3	2	3	3
			Did you applied the latest technological methods in your project	3	3	3	3	3	1	1	1	1	2	2	3	3	3
			can you revere the symbiosis of team work	0	0	0	0	0	0	0	2	3	3	3	3	3	3
			did you get awareness about the ethical and environmental effects of your	0	0	0	2	2	3	3	2	0	3	2	3	3	3
			did you get to know the finance management and documentation of your	1	3	2	2	2	1	1	2	2	2	3	3	3	3