Department of Mechanical Engineering

2021-22 COs

Course Name: Energy Science Course	C201	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
Students will be able to:		
C201.1	Understand the basics concepts of Energy and its Usage.	2
C201.2	Understand the concepts of nuclear energy, nuclear reactors and its safety operation.	2
C201.3	Apply the use of solar energy and its generations for solar photovoltaic devices etc.	3
C201.4	Apply the use of Conventional & non-conventional energy sources for different power plant.	3
C201.5	Analyze the Systems and Synthesis for Green energy, green buildings etc. and environment impact assessment.	4

Course Name: Technical Communication- KAS 301	C202	**Course Year: II**	2021-22

Sr. No	Course Outcomes	BL
Students will be able to:		
C202.1	Analyze the nature and objectives of Technical Communication relevant for workplace as Engineer.	4
C202.2	Utilize the technical Writing Skills for the purpose of Technical Communication and its exposure in various dimensions.	3
C202.3	Imbibe presentation strategies inputs with confidence in facing diverse audience in required situations at workplace.	3
C202.4	Estimate the application of Technical Communication to promote their competence for various media like report generation, resume design, GD, and Interview etc.	5
C202.5	Evaluate Voice dynamics and select appropriate cues for their own efficacy as fluent and efficient communicators.	5

Course Name: Thermodynamics KME301	C203	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C203.1	Understand the thermodynamic systems, Properties, Cycle and different	2

	forms of energy, state different laws of thermodynamics and apply first law of thermodynamics on steady and non steady flow devices	
C203.2	Understand and analyze the working of Refrigerator, Heat Pump and Heat Engine and application of second law of thermodynamic. Understand the Principle of Increase of Entropy and evaluate the Quality of Energy.	2
C203.3	Analyze the availability & Unavailability of thermal system, second law efficiency and various thermodynamics relations.	4
C203.4	Apply knowledge to solve problems related to steam, analyze p-V and T-s diagram and understand the psychometric processes	3
C203.5	Analyze the refrigeration cycles, refrigerants and refrigeration systems.	4

Course Name: Fluid Mechanics & Fluid Machines – KME 302	C204	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C204.1	Understand the basics of fluid mechanics, Bernoulli's equation and its application	2
C204.2	Analyze different types of flow, continuity equation and Buckingham's Pi theorem for dimensional analysis and apply these concepts to solve problems	4
C204.3	Analyze laminar and turbulent flow, losses in pipes, boundary layer theory and forces on submerged bodies and apply this knowledge to solve the problems	4
C204.4	Apply the principle of impact of jet and working of different types of turbines and evaluating the suitable turbines under different conditions	3
C204.5	Apply the principle and working of different types of pumps and other hydraulic devices evaluating the suitable pump under different conditions	3

Course Name: Material Engineering- KME 303	C205	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C205.1	Analyse the properties of ferrous and non-ferrous materials.	4
C205.2	Analyse the mechanism of material failure under different loading.	4
C205.3	Analyse the microstructure properties and phase diagram of engineering Materials.	4
C205.4	Apply heat treatment method to modify the material properties.	3
C205.5	Analyse effect of different alloying elements on the properties of ferrous and nonferrous alloys.	4

Course Name: Fluid Mechanics Lab- KME 351	C206	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C206.1	Apply the concept of the Impact of jet and orifice meter.	3
C206.2	Analyze different types of notches and and major losses in pipes	4
C206.3	Apply the concept of venturimeter, Bernoulli's theorem and Reynold's experiment.	3

C206.4	Analyze the concept of equilibrium of floating bodies and minor losses in pipes	4

Course Name: Material Testing Lab- KME 352	C207	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C207.1	Test the mechanical properties of material on Universal testing machine and also able to analyse test results.	4
C207.2	Evaluate materials' hardness and also able to analyse effect of different processes on hardness.	5
C207.3	Evaluate the toughness of materials by izod and charpy test.	5
C207.4	Analyse the effect of heat treatment on the same.	4
C207.5	Evaluate the modulus rigidity through torsion test and able to analyse fatigue failure of the material using Fatigue test	5

Course Name: Computer Aided Machine Drawing Lab-KME 353	C208	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C208.1	Understand and analyse the different kinds of engineering drawing symbols as per BIS Codes with classification of Drawings: Machine drawings etc	2
C208.2	Analyse the limit, fits and tolerance system and its application in machine drawing	4
C208.3	Create the 3D models using the basic concept of 2D modelling	6
C208.4	Draw the assembly of machine with the help of different detailed drawing of machine components	6
C208.5	Create the cut section view of machine assembly using CAD software	6

Course Name: Mini Project or Internship- KME 354	C209	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C209.1	Apply Technical students to the industrial environment, which cannot be simulated in the classroom and hence creating competent professionals in the industry.	3
C209.2	Understand possible opportunities to learn, understand and sharpen the real time technical /managerial skills required at the job.	2
C209.3	Apply the current technological developments relevant to the subject area of training.	3
C209.4	Apply the experience gained from the 'Industrial Internship' in discussions held in the classrooms.	3
C209.5	Create conditions conducive to quest for knowledge and its applicability on the job.	6

Course Name: Python Programming- KNC 302	C210	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C210.1	Understand read and write simple Python programs.	2
C210.2	Apply the concept of conditionals and loops in Python programs.	3
C210.3	Analyse Python functions and use Python in data structures –- lists, tuples, dictionaries.	4
C210.4	Understand input/output with files in Python.	2
C210.5	Apply the concept of searching, sorting and merging in Python.	3

Course Name: MATHEMATICS III KAS 402	C211	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C211.1	Study the methods to solve Partial Differential Equations	1
C211.2	Apply the concept of method of separation of variables to solve wave, heat, Laplace and transmission equations.	3
C211.3	Evaluate Moments, M,G.F Correlations, linear regression.	5
C211.4	Apply the concept of probability to solve discrete and continuous probability distributions.	3
C211.5	Apply the concept of sampling to study t-test, F-test and Chi-square test, One way Analysis of Variance (ANOVA).	3

Course Name: Universal Human Values & Professional Ethics- KVE401	C212	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C212.1	Understand difference between values and skills, need and process of value education, meaning of happiness and prosperity.	2
C212.2	Understand the difference between the Self and the Body, the meaning of Harmony in the Self "the Co-existence of Self and Body".	2
C212.3	Analyze the values of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships , their role in ensuring a harmonious society.	4
C212.4	Analyse the harmony in nature and existence, their mutually fulfilling participation in the nature.	4
C212.5	Decide the role of holistic understanding of harmony on professional ethics.	5

Course Name: Applied Thermodynamics- KME 401	C213	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C213.1	Analyse the basic power cycles and performance of I.C engines	4
C213.2	Analyze the process of combustion of fuel and formation of flue gases.	4

C213.3	Understand the working and performance of boiler, draught and condenser.	2
C213.4	Analyse the design and working of nozzles and steam turbines.	4
C213.5	Understand the principle, working & performance of gas turbines and jet propulsion.	2

Course Name: Engineering Mechanics- KME 402	C214	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C214.1	Apply the effect of applied, non applied and frictional forces on rigid bodies/body.	3
C214.2	Analysis the statically determinate truss/beams under various loading conditions.	4
C214.3	Calculate centroid/moment of inertia of composite body.	5
C214.4	Analysis of displacement, velocity, acceleration etc of rigid body under dynamic condition with or without consideration of applied forces.	4
C214.5	Analysis of stresses and its effect on under applied load on one dimensional bodies, beams and shafts.	4

Course Name: Manufacturing Processes- KME 403	C215	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C215.1	Analyze the various primary manufacturing processes.	4
C215.2	Analyze the phenomenon of metal cutting process	4
C215.3	Analyze grinding and different types of super finishing operations	4
C215.4	Apply the knowledge of various welding processes and their thermodynamic and metallurgical aspects.	3
C215.5	Understand the concepts of non-conventional machining processes.	2

Course Name: APPLIED THERMODYNAMICS LAB- KME 451	C216	Course Year:II	2021-22

Sr. No	Course Outcomes	BL
C216.1	Understand the construction and working of fire tube and water tube boilers, their parts, differences, mountings and accessories.	2
C216.2	Understand the construction and working of two-stroke, four-stroke petrol and diesel engines, their parts, working strokes and applications.	2
C216.3	Understand the construction and working of steam engine, its components and the modified Rankine cycle.	2
C216.4	Understand the construction and working of the steam turbines, its types, differences between impulse & reaction turbine and the compounding od impulse turbines.	2
C216.5	Understand the construction and working of gas turbine and its types, working and process of Brayton's cycle.	2

Course Name: Manufacturing Process Lab - KME 452	C217	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C217.1	Apply the casting process and remember various elements of gating system	3
C217.2	Apply different operations of lathe machine	3
C217.3	Apply different operations of milling machine	3
C217.4	Apply different operations of shaper machine	3
C217.5	Apply the concept of welding operations in welding shop	3

Course Name: CAMD Lab- KME 453	C218	Course Year: II	2021-22

Sr. No	Course Outcomes	BL
C218.1	Understand the different types of Engineering Drawing and BIS Codes.	2
C218.2	Analyse the interchangeability system and its requirement in machine drawing	4
C218.3	Understand & drafting the 3D/2D machine and allied component.	2
C218.4	Interpret and understand sketching the different machine components analysis on drawing software.	4
C218.5	Understand the sketching part Modelling & Assemblies.	2

Course Name: Heat & Mass Transfer- KME 501	C301	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C301.1	Analyze the basic laws and mechanism of different mode of heat transfer and differential governing equations for conduction.	4
C301.2	Evaluate amount of heat transfer through Fins and understand the transient heat conduction.	5
C301.3	Analysis of heat transfer through convection for different type of surface and also understand the difference between natural and forced convection.	4
C301.4	Analyze the basic laws and principles of radiation and implement them for the evaluation of equations and problems of heat transfer through radiations.	4
C301.5	Summarize heat exchanger phenomenon of parallel and counter flow and also remember the phenomenon of condensation, boiling and fundamentals of mass transfer.	4

Course Name: Strength of Materials- KME 502	C302	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C302.1	Analyse the effect of applied load on the solid body under various loading conditions.	4
C302.2	Evaluate stresses and deflection by various methods on beams and shafts	5

C303.3	Analyse spring and column under various loading conditions	4
C304.4	Analyse the stresses developed in pressure vessels	4
C305.5	Apply the concept of bending stresses on curved and unsymmetrical beams .	3

Course Name: Industrial Engineering-KME 503	C303	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C303.1	Analyze the concept of production system, productivity, facility and process planning in various industries.	4
C303.2	Apply the various forecasting and project management techniques.	3
C303.3	Analyze the concept of breakeven analysis, inventory control and resource utilization using queuing theory.	4
C303.4	Apply principles of work study and ergonomics for design of work systems.	3
C303.5	Formulate the mathematical models for optimal solution of industrial problems using linear programming approach.	5

Course Name: CIM- KME 051	C304	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C304.1	Analyse the basic concepts of automation, computer numeric control machining.	4
C304.2	Apply the algorithms of line generation, circle generation, transformation, curve, surface modeling and solid modeling	3
C304.3	Analyse group technology, computer aided process planning, flexible manufacturing, Industry 4.0, robotics	4
C304.4	Analyse information system and material handling in CIM environment, rapid prototyping	4
C304.5	Illustrate Group Technology, FMS concepts	4

Course Name: Mechatronic Systems- KME 052	C305	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C305.1	Identify key elements of mechatronics and its representation by block diagram.	4
C305.2	Understand the concept of sensors and use of interfacing systems.	2
C305.3	Understand the concept and applications of different actuators.	2
C305.4	Illustrate various applications of mechatronic systems.	4
C305.5	Design PLC ladder programming and implementation in real life problem.	5

Course Name: FEM- KME 053	C306	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C306.1	Understand the basic procedure to solve the FEM problem.	2
C306.2	Understand strain displacement relation and apply various approximate	2

	methods for solution.	
C306.3	Apply Finite Element Methods to elasticity problems and heat conduction Problems.	3
C306.4	Analyze One dimensional problem, Plane trusses, Beams and Frames using FEM.	4
C306.5	Solve Two dimensional problem using FEM and to understand Practical consideration in finite element applications.	5

Course Name: Automotive Engines & Combustion- KAU 051	C 307	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C307.1	Apply the concepts of thermodynamics to air standard cycle in IC Engines & knowledge about performance parameters and testing of IC engine.	3
C307.2	Understand the phenomena of Flames Propagation & Stoichiometry relations.	2
C307.3	Understand the phenomena of combustion and its application in SI and CI engines & Understand the essential system of IC engine	2
C307.4	Understand the concept of carburetion, fuel injection for SI Engine and knowledge about latest trends & developments in IC Engines.	2
C307.5	Understand the effect of engine emission on the environment and human health and methods of reducing it.	2

Course Name: Advanced Welding- KME 055	C308	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C308.1	Understand the physics of arc welding process and various operating characteristics of welding power source.	2
C308.2	Understand various welding processes and their applications.	2
C308.3	Apply heat flow in welding and physical metallurgy of weldments.	3
C308.4	Understand the knowledge of welding for repair & maintenance, along with the weldability of different materials.	2
C308.5	Understand the concept of weld design and testing of weldments in industrial environment.	2

Course Name: Programming, Data Structures and Algorithms using Python- KME 056	C309	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C309.1	Understand the numbers, math's function, strings, list, tuples, and dictionaries in pythons.	2
C309.2	Apply conditional statement and functions in python.	3
C309.3	Apply file handling techniques in python.	3
C309.4	Analyze the graphical demonstration in python.	4
C309.5	Apply techniques of Classes and Object Concept in Python.	3

Course Name: Mechanical Vibration- KME 057	C310	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C310.1	Understand fundamentals of mechanical vibrations along with their classification.	2
C310.2	Differentiate among single, two and multiple degree of freedom (DOF) systems.	4
C310.3	Analyze, predict and measure the performance of systems undergoing single, two and multiple DOF.	4
C310.4	Design systems with optimized vibration absorption capabilities.	6
C310.5	Apply the fundamentals to the real life problems like whirling of shaft.	3
C310.6	Solve complicated mathematical models using Numerical methods and software applications.	5

Course Name: Automotive Chasis & Suspension- KAU 052	C311	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C311.1	Understand different types of automotive chassis and frames used in automobiles.	2
C311.2	Analysis of transmission and drive line components used in automobiles.	4
C311.3	Evaluate the performance of axles and types of steering system in automobiles.	5
C311.4	Analysis of braking and suspension system of automobiles.	4
C311.5	Design and Analysis of the wheels and tyres & recent advancements made in components of automobiles.	6

Course Name: Indian Tradition, Culture & Society (ITCS)- KNC 502	C312	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C312.1	Understand the roots of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.	2
C312.2	Understand the importance of our surroundings and encourage the students to contribute towards sustainable development.	2
C312.3	Explain the holistic life styles of Yogic-science and apply wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.	2
C312.4	Understand the issues related to ‘Indian’ culture, tradition and its composite character.	2
C312.5	Apply the Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.	3

Course Name: Heat & Mass Transfer Lab- KME 551	C313	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C313.1	Apply the basic principle of conduction and convection on various elements and also evaluate the amount of heat flow through rod in conduction and convection.	3
C313.2	Summarize the comparative study about the quantity of heat transfer between fluids and solid boundaries.	4
C313.3	Analyze the principle of combined heat transfer and evaluate the amount of heat exchanged between fluids flowing within heat exchangers	4
C313.4	Built the ability to carry out simple experimental work in irradiative heat and to understand its application.	2

Course Name: Python Lab- KME 552	C314	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C314.1	Apply conditional statement, loops condition and functions in python program.	3
C314.2	Solve mathematical and mechanical problems using python program	5
C314.3	Plot various type of chart using python program	5
C314.4	Analyze the mechanical problem using python program	4

Course Name: IOT Lab- KME 553	C310	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C315.1	Understand the concept of Internet of Things.	2
C315.2	Implement interfacing of various sensors with Arduino/Raspberry Pi.	4
C315.3	Demonstrate the ability to transmit data wirelessly between different devices.	5
C315.4	Show an ability to upload/download sensor data on cloud and server.	5
C315.5	Hardware interfacing of Arduino with wifi modules.	4

Course Name: Mini Project/Internship Assessment- KME 554	C316	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C316.1	Apply technical knowledge to the students to cope with industrial environment, which can not be simulated in the classroom and hence creating competent professionals in the Industry.	3
C316.2	Understand possible opportunities to learn , understand and sharpen the real time technical /managerial skills required at job.	2
C316.3	Apply the current technological developments relevant to subject area of training.	3
C316.4	Apply the experience gained from the industrial internship in the discussion	3

	held in the classrooms.	
C316.5	Create conditions conducive to quest for knowledge and its applicability on the job.	6

Course Name: Refrigeration & Air Conditioning- KME 601	C317	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C317.1	Analyze the performance of air refrigeration systems.	4
C317.2	Analyze the performance of vapor compression refrigeration systems.	4
C317.3	Analyze the performance of vapor absorption refrigeration system, categorize the refrigerants and describe the properties of refrigerants.	4
C317.4	Analyze different psychrometric processes and examine the cooling load calculation.	4
C317.5	Illustrate the working of different refrigeration and air-conditioning equipments, non-conventional refrigeration systems and cold storage.	4

Course Name: Machine Design- KME602	C318	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C318.1	Design the machine components against static and fatigue loading.	6
C318.2	Design the riveted joint, welded joint and shafts.	6
C318.3	Design the sliding and rolling contact bearing	6
C318.4	Design the spur and helical gear.	6
C318.5	Design of clutch and engine cylinder and piston.	6

Course Name: Theory of Machine- KME 603	C319	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C319.1	Calculate velocity and acceleration for 4 bar and slider crank mechanism.	3
C319.2	Develop cam profiles for different motion of followers and apply the concepts of gears.	6
C319.3	Apply the static and dynamic force analysis of four bar mechanism and slider crank mechanism.	3
C319.4	Apply the concept of static and dynamic balancing and principles of governors.	3
C319.5	Apply the principle of brakes, dynamometer and gyroscope and understand it’s working.	3

Course Name: Non- Destructive Testing- KME 061	C320	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C320.1	Apply the concept of visual inspection method in detecting surface defects.	3

C320.2	Apply the concept of penetrant testing method and magnetic particle testing method for detecting surface and sub-surface flaws.	3
C320.3	Apply the concept of radiographic testing method for detecting internal defects.	3
C320.4	Apply the principles of Ultrasonic testing in medical and engineering areas for detecting internal flaws.	3
C320.5	Apply the concept of eddy current testing method for detecting flaws.	3

Course Name: Artificial Intelligence- KME 062	C321	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C321.1	Understand the key components of the artificial intelligence field and its importance in Mechanical Engineering in terms of intelligent agents.	2
C321.2	Analyze the problem as a state space, graph, design heuristics and selection of different search or game-based techniques to solve them.	4
C321.3	Apply the fundamentals of knowledge representation and evaluate the working knowledge of reasoning in the presence of incomplete and/or uncertain information.	3
C321.4	Apply machine learning techniques to real-world problems on both complete and hidden data.	3
C321.5	Create the basics of pattern recognition process, classification techniques and apply the same on real world problems	6

Course Name: Tribology	C322	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C322.1	Identify and explain various friction and wear mechanisms.	4
C322.2	Selection of proper lubricants for different applications.	4
C322.3	Selection of suitable lubrication methods in different bearings	4
C322.4	Study the surfaces coating techniques for reduction of wear.	2
C322.5	Analyze the impact of friction in various kinematic pairs.	4

Course Name: Automotive Electrical & Electronics- KAU 061	C323	Course Year:	2021-22

Sr. No	*Course Outcomes*	BL
C323.1	Understand the basic concepts of electrical systems and features of charge storage devices and methods to test these devices	2
C323.2	Apply the principles and characteristics of charging and starting system of automobile	3
C323.3	Analyze the ignition and auxiliary system- types & constructional features used in automobile	4
C323.4	Understand the principles and architecture of electronics systems and its components present in an automobile	2
C323.5	Analyse the latest trends developed in electrical and electronic systems of automobile.	4

Course Name: Software Project Management- KOE 068	C324	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C324.1	Identify project planning objectives, along with various cost/effort estimation models.	5
C324.2	Organize & schedule project activities to compute critical path for risk analysis.	2
C324.3	Monitor and control project activities.	2
C324.4	Formulate testing objectives and test plan to ensure good software quality under SEI-CMM.	5
C324.5	Configure changes and manage risks using project management tools.	5

Course Name: Constitution of India	C325	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C325.1	Identify and explore the basic features and modalities about Indian constitution.	5
C325.2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.	4
C325.3	Differentiate different aspects of Indian Legal System and its related bodies.	4
C325.4	Discover and apply different laws and regulations related to engineering practices.	3
C325.5	Correlate role of engineers with different organizations and governance models	4

Course Name: RAC Lab	C326	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C326.1	Demonstrate the working of refrigeration and air-conditioning systems and its various components.	2
C326.2	Analyze the performance parameters of refrigeration and air-conditioning systems.	4
C326.3	Analyze the performance parameters of a two-stage air compressor.	4
C326.4	Analyze the performance parameters of an air washer.	4

Course Name: MD Lab	C327	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C327.1	Apply the principles of solid mechanics to design various machine Elements subjected to static and fluctuating loads.	3
C327.2	Write computer programs and validate it for the design of different machine elements	1
C327.3	Evaluate designed machine elements to check their safety.	5

Course Name: TOM Lab	C328	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C328.1	Demonstrate various mechanisms, their inversions.	2
C328.2	Apply cam-follower mechanism to get desired motion of follower.	3
C328.3	Apply the concepts of gears and gear train to get desired velocity ratio for power transmission.	3
C328.4	Apply the concept of governors to check their stability and sensitivity.	3
C328.5	Determine the balancing load in static and dynamic balancing problem and whirling speed of shafts.	4
C328.6	Apply the principal of gyroscopic couple on Motorized Gyroscope and its verification.	3

Course Name: Project management & Entrepreneurship- KHU 702	C401	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C401.1	Understand the basic concept of Entrepreneurship, its need and scope of implementation; Factors affecting entrepreneurial development; Entrepreneurial motivation theories and Classification of entrepreneurs with EDP.	2
C401.2	Create Entrepreneurial Idea and Identify Business Opportunities, Management skills for Entrepreneurs and managing for Value Creation; Sustaining Enterprising Model & Organizational Effectiveness.	6
C401.3	Understand the Project management; project life-cycle, Project appraisal and creation of a real time project feasibility report containing Technical, Environmental, Market and managerial appraisal.	2
C401.4	Understand the concept of project cost estimation and working capital requirements, source of funds, capital budgeting process and creation of projected financial statements viz. Projected balance sheet, projected income statement, projected funds & cash flow statements, and detailed project report.	2
C401.5	Understand the perspectives of social sector, Social Entrepreneurship, opportunities and models, marketing management for Social Ventures, Risk Management in Social Enterprises, Legal Framework for Social Ventures.	2

Course Name: Renewable Energy Resource- KOE 074	C402	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C402.1	Understand the significance of various non-conventional energy resources, their availability and Limitations	2
C402.2	Design and analyse of solar thermal collectors to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, manufacturability, and sustainability	6
C402.3	Apply the modern engineering techniques such Magneto-hydrodynamics (MHD) generator and fuel cell for non conventional energy resources	3
C402.4	Evaluate the impact of wind energy resources and plants as an engineering	5

	solution in societal and environmental context in order to have sustainable development	
C402.5	Understand the basic design of Ocean thermal energy plant and wave energy plant to apply the modern engineering practices.	2

Course Name: Operations Research- KOE 075	C403	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C403.1	Develop operation research models and apply LPP Method.	5
C403.2	Apply the mathematical tools involved in transportation and assignment problems.	3
C403.3	Evaluate the optimal strategy for games and optimal sequence for machines.	5
C403.4	Solve inventory control and simulation problems for practical purposes.	5
C403.5	Analysis of Queuing and project management problems.	4

Course Name: Additive Manufacturing- KME 071	C 404	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C404.1	Understand the basics of additive manufacturing/rapid prototyping.	2
C404.2	Understand the role of additive manufacturing in the design process and the implications for design.	2
C404.3	Understand the processes used in additive manufacturing for a range of materials and applications.	2
C404.4	Apply the various software tools, processes and techniques that enable advanced/additive manufacturing and personal fabrication.	3
C404.5	Apply knowledge of additive manufacturing for real life applications.	3

Course Name: HVAC Systems- KME 072	C 405	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C405.1	Apply the concepts in advanced refrigeration cycle and understand use of refrigerants with their respective applications and its future trends.	3
C405.2	Apply the concepts of psychrometry in various psycrometry processes and understand various air-conditioning design conditions.	3
C405.3	Understand the components and working of heat pumps, concept of ventilation and different air-conditioning systems.	2
C405.4	Apply the basic concepts to calculate the HVAC loads for different applications.	3
C405.5	Apply the concepts to air distribution systems and understand the working of various auxiliary components.	3

Course Name: Hybrid Vehicle Propulsion- KAU 072	C406	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C406.1	Understand the basics of the hybrid electric vehicles and it's types.	2
C406.2	Understand the types of drive trains used in hybrid vehicles.	2
C406.3	Understand the propulsion units used in Hybrid Vehicles and their efficiency.	2
C406.4	Understand the requirements and devices of energy storage used in hybrid vehicles.	2
C406.5	Understand the concept of downsizing of IC engines in case of hybrid vehicles.	2
C406.6	Analyze the hybrid vehicle configuration by different techniques, sizing of components and design optimization and energy management.	

Course Name: Mathematical Modelling of Manufacturing Processes- KME 073	C407	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C407.1	Understand the fundamentals of manufacturing processes, mathematical models and their solutions.	2
C407.2	Understand the fundamentals of manufacturing processes, mathematical models and their solutions.	2
C407.3	Evaluate microstructure properties and residual stress of different manufacturing processes	5
C407.4	Apply the principles of casting, powder metallurgy, coating and additive manufacturing	3
C407.5	Analyze the mechanism of heat and mass transfer in welding	4

Course Name: Machine Learning- KME 074	C 408	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C408.1	Understand the need of machine learning concepts.	2
C408.2	Understand a wide variety of ML Algorithms and how to evaluate models generated from data.	4
C408.3	Solve prediction-based problems.	5
C408.4	Analyze machine learning algorithms.	3
C408.5	Apply the Algorithms to real-world problems.	6

Course Name: Power Plant Engineering- KME 076	C409	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C409.1	Understand different sources of power generation and their impact on	2

	environment and apply thermodynamic concepts to measure the performance of steam power plant.	
C409.2	Understand the role and working of different components of Hydro power plant and Gas power plant and gas turbine power plant and apply the concepts to measure the performance of these power plants.	2
C409.3	Understand the role and working of different components of Nuclear power plant and Solar power plants.	2
C409.4	Understand the working of various non-conventional power plants such as Geo-thermal, Wind and Tidal power plant.	2
C409.5	Understand the roles of different electrical systems & instruments and impact of power generation on environment and apply the concept of power generation economics.	2

Course Name: Vehicle Body Engineering & Safety- KAU 073	C410	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C410.1	Understand the classification of the vehicles on the basis of body.	2
C410.2	Analyze the importance of material selection in designing automotive bodies.	4
C410.3	Apply the concepts of aerodynamics used in designing automobiles.	3
C410.4	Analyze the importance of interior and exterior ergonomics while designing the vehicle.	4
C410.5	Calculate various aerodynamic forces and moments acting on vehicle, load distribution in vehicle body and stability of vehicle.	5

Course Name: Measurement & Metrology Lab- KME 751	C411	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C411.1	Evaluate linear and angular measurements using linear and angular measuring instruments	
C411.2	Understand the use of limits, fits and tolerance for designing purposes.	
C411.3	Apply and understand the use of various limit gauges	
C411.4	Evaluate the roundness error using dial indicator	
C411.5	Evaluate the roundness error using dial indicator	

Course Name: Mini Project or Internship Assessment- KME 752	C412	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C412.1	Apply Technical students to the industrial environment, which cannot be simulated in the classroom and hence creating competent professionals in the industry.	3
C412.2	Understand possible opportunities to learn, understand and sharpen the real time technical /managerial skills required at the job.	2
C412.3	Apply the current technological developments relevant to the subject area of training.	3

C412.4	Apply the experience gained from the 'Industrial Internship' in discussions held in the classrooms.	3
C412.5	Create conditions conducive to quest for knowledge and its applicability on the job.	6

Course Name: Project- KME 753	C413	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C413.1	Analyze and describe the problem domain.	4
C413.2	Formulate clear work plan and procedure.	6
C413.3	Analyze and discuss the results to draw valid conclusions. Describe and acquire both generic and specific skills.	4
C413.4	Create a report as per recommended format and defend the work.	6
C413.5	Evaluate the possibility of publishing papers in peer-reviewed journal/conference proceedings.	5

Course Name: Entrepreneurship Development - KOE 083	C414	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C414.1	Understand the concepts of entrepreneurship and micro, small, medium enterprise (MSME)	2
C414.2	Understand the concepts of project identification and its features	2
C414.3	Apply the knowledge of accountancy and inventory control.	3
C414.4	Understand the concepts of project planning and control.	2
C414.5	Understand the laws concerning entrepreneur and partnership.	2

Course Name: Human Values In Buddha And Jain Darshan- KOE 098	C415	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C415.1	Understand the basic concepts of Buddha and Jain Darshan.	2
C415.2	Understand the human being, the needs and activities of human being through Buddha and Jain Darshan.	2
C415.3	Understand the whole existence.	2
C415.4	Analyze the role of human being in the entire existence, thus getting clarity about values at all levels of living and human conduct.	4
C415.5	Analyze the foundation of human society and human tradition.	4

Course Name: Rural Development: Administration and Planning KHU-801	C416	Course Year:	2021-22

Sr. No	Course Outcomes	BL

C416.1	Understand the concepts, basics and importance of rural development	2
C416.2	Recognize and acquire knowledge of pre and post-independence rural development programs.	4
C416.3	Understand the importance, structure, significance of Panchayati raj and rural administration.	2
C416.4	Understand about the need and importance of human resource development in rural sector.	2
C416.5	Analyze the importance of rural industrialization and entrepreneurship.	4

Course Name: Project II- KME 851	C417	Course Year:	2021-22

Sr. No	Course Outcomes	BL
C417.1	Analyze and describe the problem domain.	4
C417.2	Formulate clear work plan and procedure.	6
C417.3	Analyze and discuss the results to draw valid conclusions. Describe and acquire both generic and specific skills.	4
C417.4	Create a report as per recommended format and defend the work.	6
C417.5	Evaluate the possibility of publishing papers in peer-reviewed journal/conference proceedings.	5