COURCE OUTCOMES(CO)
3 Semester

Subject: 24UME301T-Kinematics of Machines

CO	CO Statement
1	Recognize and describe different linkage mechanisms that generate specific motion.
2	Interpret and apply the graphical method to conduct kinematic analysis (displacement, velocity, acceleration) of a given mechanism.
3	Demonstrate and implement innovative mechanisms for specific applications.
4	Construct and interpret cam profiles to understand follower motion.

Subject: 24UME302T-Material Engineering

CO	CO Statement
1	Define microstructure and analyze the effect of Crystalline nature of metals
2	Describe the equilibrium diagram, Iron-Iron carbide diagram and heat treatment process
3	Interpret the steel & Cast Iron.
4	Define and label the basics of powder Metallurgy for powder metallurgical components.

Subject: 24UME303T-General Mathematical Techniques

CO	CO Statement
1	Use the eigen values and eigen vector, canonical form of a matrix to solve various engineering problems
2	To learn the concept of function of complex variables
3	Implement the concept of random variables with respect to probability function, distributive function
4	Demonstrate an approximate solution of algebraic and transcendental equation , system of linear equations by numerical technique

Subject: 24UOE341T-Introduction to Electric Vehicles

CO	CO Statement
1	Compare IC engine vehicle and Electric vehicle.
2	Calculate the torque requirement in electric vehicle.
3	Describe the different types of electric vehicles and electrification level of EV and comparison with solar powered operated EV.
4	Describe various types of electric drive and controller used in electric vehicle.
5	Describe the Energy Storage Solutions (ESS) & Energy Management System (EMS) in context of electric vehicle
6	Explain Electric Vehicles charging station.

COURCE OUTCOMES(CO)

Subject: 24UOE342T-Waste Management

CO	CO Statement
1	Describe aspects of solid waste, its sources and effects on man and material etc
2	Explain problems arriving in handling large amount of solid waste generated, its collection and transportation, processing and will be able to design safe collection and disposal methods.
3	Explain Methods and equipment for solid Waste management to reduce its impact on the environment
4	Explain & analyse hazardous waste
5	Describe the appropriate disposal system for hazardous waste management
6	Explain the water waste management,sludge disposal effects and its method

Subject: 24UME305T-Professional Communication

CO	CO Statement
1	Construct Correct Sentences for Spoken and Written English
2	Develop writing and Speaking Skills
3	Demonstrate Writing Skills at Work Place
4	Prepare Themselves for Job Placement

Subject: 24UME306T-Digital Economy and Management

CO	CO Statement
1	Utilize Knowledge of Economic Theories and Share Market
2	Explain Key Trends in Digital Economics
3	Acquire Knowledge of Business Strategies
4	Analyse the Key Drivers of Small Scale Industries in India

Subject: 24UME307T-Environmental Sciences

CO	CO Statement
1	Explain the importance of environmental science and gain in-depth knowledge of natural resources.
2	Demonstrate knowledge on ecosystem and conservation of biodiversity for environmental protection .
3	Acquire knowledge in current environmental problems and their prevention.
4	Explain and adopt sustainability in life, society and industry for the well being of mankind.

COURCE OUTCOMES(CO)

4 Semester

Subject: 24UME401T-Engineering Thermodynamics	
CO	**CO Statement**
1	To explain the basic concepts of thermodynamics, thermodynamics laws and thermodynamics processes
2	To evaluate the first law of thermodynamics, change in internal energy, heat transfer during thermodynamics processes and steady flow processes.
3	To explain the second law of thermodynamics, reversible and irreversible processes. Concept of entropy.
4	To explain properties of steam, dryness fraction, T-S diagram, Mollier chart. Concept of vapour cycles and air-standard cycle.

Subject: 24UME402T-Fluid Mechanics and Hydraulic Machines	
CO	**CO Statement**
1	Explain the properties of fluid, to apply hydrostatic laws on submerged surfaces and analyze stability of floating body based on principles of buoyancy & flotation.
2	Explain the Various pressure measuring devices and evaluate kinematics for fluid flow
3	Formulate, analyze & apply basic principles of fluid dynamics and explain viscous fluid flow
4	Describe the concepts of jet propulsion and its velocity triangles .Explain principle of hydraulic machines,velocity diagram and design parameter of impulse turbine,
5	Explain the concept of reaction turbine, selection of hydraulic turbines, draft tube and cavitation of turbine
6	Explain the concept of hydraulic pumps, design consideration of pumps and N.P.S.H.

Subject: 24UME403T-Dynamics of Machine	
CO	**CO Statement**
1	Recognize and develop solutions based on gyroscopic effects for stability
2	Identify and construct the dynamic forces in planar linkages and cams to determine the required driving torque.
3	Design and interpret balancing techniques for rotating and reciprocating masses.
4	Identify and develop methods for designing a flywheel and evaluating vibrations.

Subject: 24UOE453T-Project & Cost Management	
CO	**CO Statement**
1	Explain the cost and management accounting techniques for evaluation, analysis and application in managerial decision making.
2	Differentiate marginal and absorption costing methods in respect of profit reporting.
3	Apply marginal and absorption costing approaches in job, batch, and process environments.
4	Summarize budgets and standard costs and variance statements.

COURCE OUTCOMES(CO)

Subject: 24UOE452T-Project Evaluation & Management

CO	CO Statement
1	Summarize the use of a structured approach for each and every unique project undertaken including utilizing project management concepts, tools, and techniques.
2	Apply participatory methods to project management.
3	Discuss network scheduling and network planning
4	Identify lifecycle on the various phases from project initiation through closure.

Subject: 24UBS411T

CO	CO Statement
1	Apply the Essentials of Value Education and Self Explorations
2	Relate the Co-existence of self with the Body
3	Interpret the Importance of Harmony in Family, Society and Universal Order
4	Associate the holistic Perception of Existence at All Levels

Subject: 24UBS407T-Entrepreneurship and Startups

CO	CO Statement
1	Tell the basics of entrepreneurship development
2	Identify various types of startups.
3	Describe the concept of ideation.
4	Explain knowledge of start-up funding.

COURCE OUTCOMES(CO)
5 Semester

Subject: BEME501T Heat Transfer	
CO	**CO Statement**
1	Define and compare the different modes of heat transfer. Calculate heat transfer for cylinders and spheres with and without thermal contact resistances.
2	Apply internal heat generation concepts to calculate heat transfer for plane walls, cylinders, and spheres. Learn about different types of fins, their significance in steady-state conduction, and the concept of unsteady-state heat transfer.
3	Select and apply appropriate empirical correlations to estimate forced convection and free convection heat transfer, for internal and external flows.
4	Evaluate heat transfer rate by radiation from ideal and actual surfaces and enclosures of different geometries.
5	Evaluate heat exchanger performance based on given geometry and boundary conditions. Design an appropriate heat exchanger geometry to achieve the desired heat transfer rate.

Subject: BEME502T: ENERGY CONVERSION - I	
CO	**CO Statement**
1	Explain, classify, analyze layout of power plant, cogeneration principle of steam generators (i.e. Boilers), boiler mountings & accessories and evaluate performance parameters of boiler.
2	Explain the concepts of fluidized bed boilers and various draught system and evaluate performance parameters of natural draught system(i.e. chimney)
3	Explain the importance of steam nozzle and determine its throat area, exit area, exit velocity. Also compare impulse and reaction steam turbines and explain the concept of governing of steam turbine
4	Explain the methods of compounding of steam turbine, various energy losses in steam turbine and able to draw velocity diagrams of steam turbine blades to analyze the angles of the blades, work done, thrust, power, efficiencies of turbine.
5	Explain, classify steam condensers, cooling towers and evaluate performance parameters of surface condenser.

Subject: BEME503T Design of Machine Elements	
CO	**CO Statement**
1	Apply principals of static loading for design of Cotter joint, Knuckle joint
2	Illustrate the design of bolted and welded joints, power screws, and pressure vessels.
3	Illustrate the design of power transmission shaft & coupling
4	Apply design principles to components subjected to fatigue and fluctuating stresses, and analyze bending stresses for the design of curved beams such as crane hooks and C-frames.
5	Illustrate the design of clutches, brakes and springs.

Subject: BTME504T Industrial economics and management	
CO	**CO Statement**
1	Explain the concept of demand and supply and its relationship with the price
2	Illustrate various factors of production with reference to different economic sectors

COURCE OUTCOMES(CO)

Subject: BTME504T Industrial economics and management

CO	CO Statement
3	Summarize the causes and effects of inflation and market structure
4	Outline knowledge of various functions of management and marketing management
5	Illustrate the concept of financial management for the growth of business

Subject: BTME505T Mechanical Measurement and Metrology

CO	CO Statement
1	Summarize statistical characteristic of systems.
2	Calculate system response.
3	Describe instrumentation process.
4	Determine limits fits and tolerance.
5	Explain various metrology measurement terms and techniques.

COURCE OUTCOMES(CO)

6 Semester

Subject: BTME601T Automation in Production

CO	CO Statement
1	Get Acquainted with automation, its type, strategies, assembly line balancing and its analysis, method of work part transport
2	Explain fundamentals and constructional features of N.C.,C.N.C and D.N.C machines and prepare a CNC program for given part.
3	Summarize with the robotic configuration, types of links, joints, grippers, industrial robotics and robot application.
4	Cultivate information about automated material handling system, automated storage and retrieval system(AGVS,AS/RS)its analysis
5	Describe with automated inspection (CAPP, CAQC, CMM) and group technology

Subject: BEME602T: ENERGY CONVERSION - I

CO	CO Statement
1	Explain various types of I.C. Engines and the working. Combustion stages, factors affecting the combustion and abnormal combustion, Super charging, fuel supply in S.I. and C.I. Engines and introduction to hybrid and electric vehicle.
2	Analyze the effect of various operating variables on engine performance.
3	Explain and analyze the working of Gas Turbine and Jet propulsion system.
4	Analyze the vapour compression refrigeration system, psychometric process and air-conditioning systems. Explain the vapour absorption system.
5	Explain and analyze the working and performance of various types of compressors.

Subject: BEME603T Dynamics of Machines

CO	CO Statement
1	Comprehend the machine dynamics through basic principles to interpret their application and examine near to life problems due gyroscopic effects and determine the conditions for stability of ships, airplanes and automobile.
2	Analyze dynamic force conditions in planer linkages and cams to determine required driving torque condition (graphically/ analytically).
3	Estimate the unbalanced forces due to rotating and reciprocating masses in a mechanical system and calculate (graphically/ analytically) the balancing masses required for safe/ smooth operation of these mechanical systems.
4	Identify the requirement of flywheel, brakes, and dynamometers in a mechanical system and calculate inertia of flywheel and braking condition to be incorporated in engines and machines.
5	Recognize and interpret the concept of vibration in various mechanical systems and distinguish vibration characteristics for 1 & 2 DOF systems to evaluate the conditions for its control/ use.

Subject: BEME604T1 Operation Research

CO	CO Statement
1	Describe the importance and value of Operations Research and mathematical modeling in solving practical problems in industry

COURCE OUTCOMES(CO)

Subject: BEME604T1 Operation Research

CO	CO Statement
2	Solve given situation to mathematical form and determine optimal solution of transportation and assignment problems
3	Describe operations Research models and apply them to real-life problems;
4	Examine projects for minimum total cost and smooth level of resources.
5	Describe sequence and queuing operations for optimal solutions

Subject: BTME604T2 Production planning and control

CO	CO Statement
1	Describe need of various functions in production planning and control for better management of manufacturing and or secure systems
2	List qualitative and quantitative forecasting techniques for short, medium and long range forecasting
3	Illustrate material requirement plans (MRP) as part of resource reruirement planning systems
4	Use heuristics decision rules to make lot sizing decisions
5	Illustrate capacity requirement plans as part of resource requirements planning systems

Subject: BEME604T3 POWER PLANT ENGINEERING

CO	CO Statement
1	Student will able to explain the components of steam power plant and steam generator. Also will be able to learn about advantages, drawbacks and environmental impact.
2	Students will get acquainted with working of Gas Turbine power plant and Diesel electric power plant, their comparison with other power plants and also Introduce to captive power plant.
3	Student will be able to explain the complete working of hydroelectric power plant ,its advantages and comparison with other power plants.
4	Student will be able to explain the importance of Nuclear power generation in India, working of various nuclear reactors and complete working of nuclear power plant, waste disposal and its impact on environment and also its comparison with other power plants.
5	Student will be able to explain the concept of combined power plant and gets acquainted with the emerging power generation technologies. Also will able to undertake the power load analysis and economic analysis of power generation system.

Subject: BEME604T3 Renewable Energy Sources

CO	CO Statement
1	Recognize the need of renewable energy sources.

COURCE OUTCOMES(CO)

Subject: BEME604T3 Renewable Energy Sources

CO	CO Statement
2	Explain the various solar thermal energy conversion systems and solar photovoltaic systems in detail.
3	Describe different biogas plants, bio-diesel production method and potential of hydrogen as a fuel.
4	Explain the working principle of Wind energy systems and ocean thermal energy conversion systems.
5	Describe the working of Fuel cell systems. Geothermal & Magneto hydro dynamic (MHD) power generation systems and review the principles of energy conservation.

Subject: BTME605T Advanced Manufacturing Techniques

CO	CO Statement
1	Describe and compare the different Non-Traditional machining process with their need, economics and application as well as historical development. Discuss the basics of High speed grinding, Hot and Cold machining.
2	State the basics of Abrasive Jet Machining (AJM), Ultrasonic Machining process and Water Jet Machining.
3	Explain with the Electro-Chemical Machining, Electrochemical Grinding, Electric Discharge Machining. Get acquainted with the Electron Beam, Laser Beam and Plasma Arc Machining.
4	Define the basics of unconventional welding techniques and Solid Phase welding techniques.
5	Discuss the basics of advance casting processes.

Subject: BEME606T1: AUTOMOBILE ENGINEERING

CO	CO Statement
1	Demonstrate the vehicle construction, chassis, fuel supply system, lubrication system and cooling system in automobile.
2	Illustrate the principle and working of Transmission system and clutch, gear box, rear axle drives, fluid flywheel, torque converter
3	Identify the steering, suspension system and brake system.
4	Explain the applications of electrical/electronic system of automobile and wheels, tyres.
5	Explain the concept of electric vehicles, Hybrid vehicles, fuel cell vehicles and vehicle pollution norms. Appraise the automobile safety system and recent development in automobiles.

Subject: BTME606T2 Entrepreneurship Development

CO	CO Statement
1	Explain entrepreneurship qualities and skills to startup a business
2	Describe entrepreneurship policies to startup a business

COURCE OUTCOMES(CO)

Subject: BTME606T2 Entrepreneurship Development

CO	CO Statement
3	Determine a feasibility report and evaluation criteria for an entrepreneurship
4	Demonstrate marketing strategies of entrepreneurship
5	Apply preventive measures to be followed for effective management of Entrepreneurship

Subject: BTME606T3 Operation Research Techniques

CO	CO Statement
1	Solve and obtain the optimal solution for Linear Programming problems.
2	Identify, formulate and obtain optimal solution using transportation and assignment model
3	Describe Network models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these Network problems
4	Illustrate the problem using Queuing model and Inventory model.
5	Tabulate the machine/job in a sequence and also simulate the real life problem.

Subject: BTME606T4 Project Evaluation Management

CO	CO Statement
1	Summarize the use of a structured approach for each and every unique project undertaken including utilizing object management concepts, tools and techniques.
2	Apply participatory methods to project management.
3	Illustrate network scheduling and network planning.
4	Identify lifecycle on the various phases from project initiation through closure.
5	Analyze project Costs, Earned Value Analysis, Monitoring Project Progress and Project Appraisal

COURCE OUTCOMES(CO)
7 Semester

Subject: BEME701T1: ADVANCEMENT IN AUTOMOBILE ENGINEERING

CO	CO Statement
1	Classify and identify the main components of automobile. Explain the construction and working of I.C.Engine, fuel supply and lubrication systems used in automobile.
2	Illustrate the functions of different types of automobile clutches and gear boxes and their applications.Explain the working of transmission system, its components such as propeller shaft, drive differential and axles.
3	Describe the working of different steering systems, steering gear boxes and suspension systems. Identify the different components of steering, suspension and brake systems with their comparisons and applications.
4	Demonstrate the importance of safety considerations in automobiles and outline the recent technological development in automotive safety. Describe the automobile maintenance, Trouble shooting, service procedures, Overhauling and Engine tune up.
5	Explain the working of Electric Car, Hybrid Electric vehicles and Fuel cell vehicles, Describe the importance of Alternative energy sources, Vehicle Pollution norms and different methods of pollution.

Subject: BEME701T2 Computer Aided Design

CO	CO Statement
1	Explain the process of designing a graphic system by choosing suitable input and output devices for various graphical applications. Apply logical reasoning to create geometrical entities used in modeling software by implementing appropriate mathematical techniques, structuring them into an algorithm, and translating the algorithm into a computer program.
2	Illustrate the logic for various transformations on 2D and 3D geometric objects by applying appropriate mathematical techniques, organize them into an algorithm, and implement the algorithm into a computer program.
3	Apply various geometric modeling techniques, synthetic curves, and methods of assembly modeling. Analyze the parametric representation of space curves and surfaces.
4	Implement the numerical analysis technique known as the finite element method and examine its application to one-dimensional problems to compute various field variables.
5	Apply finite element method on truss and beams to determine various fields variances such as nodal displacement, reaction force, element stress etc.

Subject: BEME701T3 Mechatronics

CO	CO Statement
1	Explain the key elements of mechatronics systems and their applications in automation, feedback control, and real-world engineering solutions.
2	Analyze system interfacing and data acquisition techniques, including DAQs, SCADA, digital and analog communication, and motor drive interfacing.
3	Demonstrate knowledge of actuating systems, including electrical, mechanical, pneumatic, and hydraulic systems used in automation and control.
4	Implement digital logic concepts and microprocessor-based control, covering logic gates, Boolean algebra, microprocessor architecture, and interfacing techniques.
5	Develop PLC-based control systems using ladder diagrams, timers, counters, and SCADA integration for industrial applications.

COURCE OUTCOMES(CO)

Subject: BEME702T: ENERGY CONVERSION - III

CO	CO Statement
1	Analyze the gas turbine and jet propulsion system on varied operating conditions.
2	Recognize the hydraulic pumps and valves and can able to logically design the hydraulic circuit.
3	Recognize the air compressors and pneumatic control valves and can able to logically design the pneumatic circuit.
4	Explain solar power and future opportunities in solar power systems.
5	Describe the basics of various non-conventional; energy sources and their applications.

Subject: BTME703T1 Finance and Cost Management

CO	CO Statement
1	Explain basics of Financial Management concepts and Time Value of Money
2	Describe the sources of finance, types of capital, various elements of costs, cos) control and evaluate equipment replacement policy, make or buy decisions
3	Illustrate books of Accounts, Trial Balance, balance Sheet, P& L account, cash flow statement in business
4	Calculate Cost of Capital, opportunity cost of capital, Cost of different sources of finance
5	Determine various techniques of capital, profitability index.

Subject: BEME703T2 INTRODUCTION TO ELECTRIC VEHICLES

CO	CO Statement
1	Explain the basics of electric vehicles, and comparison with internal combustion engine.
2	Interpret the working of different electrical equipment in electric vehicles and working of various motors.
3	Explain the use of different energy storage systems used electric vehicles, their control techniques.
4	Discuss the control and configurations of EV charging stations and know how of various energy.
5	Review the policies and regulations for electric vehicles in global and Indian Scenario.

Subject: BEME703T3: OPEN ELECTIVE-II: WASTE MANAGEMENT

CO	CO Statement

COURCE OUTCOMES(CO)

Subject: BEME703T3: OPEN ELECTIVE-II: WASTE MANAGEMENT

CO	CO Statement
1	Describe different aspects of solid waste, its sources and effects on man and material etc.
2	Recognize problems arriving in handling large amount of solid waste generated, its collection transportation, processing and will able to design safe collection and disposal methods
3	Apply waste processing techniques and evaluate regulations for sustainable solid waste management.
4	Define and categorize hazardous waste sources, characteristics, and transport routes, and apply sampling and analysis techniques for its characterization and control.
5	Identify sources and characteristics of hazardous and radioactive wastes, and apply physical, chemical, and thermal treatment technologies for their handling, storage, transport, and management.

Subject: BTME704T Design of Transmission Systems

CO	CO Statement
1	Calculate the dimensions of journal and thrust bearings and selection of standard rolling contact bearings.
2	Compile and Estimate dimensions of flexible transmission drives like belts, chains and rope
3	Implement procedure to plan the positive transmission drives like gears as spur and Helical Gear.
4	Compute and categorize the positive transmission drives like gears as worm and Bevel Gears
5	Construct and outline the energy storing components like Flywheels for various applications.

COURCE OUTCOMES(CO)

8 Semester

Subject: BTME801T-Industrial Engineering

CO	CO Statement
1	Recognize the concept of productivity and method study.
2	Calculate work time and design ergonomic system.
3	Explain the concept of forecasting and breakeven analysis.
4	Interpret maintenance and reliability of equipment.
5	Explain various quality control tools and techniques.

Subject: BTME802T1 Computer Integrated Manufacturing

CO	CO Statement
1	To Define integration of business function with manufacturing planning & control.
2	To apply fundamentals of robotics or industrial applications.
3	To develop CNC program for manufacturing applications.
4	To discuss the process of Group Technology for Flexible Manufacturing System.
5	Get Acquainted with Automated Inspection (CAPP, CAQC,CMM) and Group Technology

Subject: BEME802T2 Finite Element Method

CO	CO Statement
1	Define the principles of solid mechanics and explain their application in assessing point load, body force, traction, and torsional loads..
2	Interpret the use of finite elements in structural analysis and develop their formulation for static and truss problems.
3	Implement appropriate methods to assess the effects of transverse loading on a beam.
4	Utilize finite element techniques to examine the governing equations of systems governed by partial differential equations.
5	Apply the concepts of thermal engineering to analyze the significance and differences between the formulation and application of 1D and 2D finite element models.

Subject: BEME802T3 REFRIGERATION AND AIR-CONDITIONING

COURCE OUTCOMES(CO)

CO	CO Statement
1	Examine the Vapor Compression Refrigeration Cycle, eco-friendly refrigerants, and efficient cooling designs for various applications.
2	Explain and analyze various refrigeration systems and advanced techniques for efficient thermal management in diverse applications.
3	Explain psychrometric properties, thermal comfort, and heat load calculations to design efficient air conditioning systems.
4	Explain air distribution, duct design, and filtration techniques to analyze and design efficient climate control systems.
5	Explain air conditioning system design, fluid flow, control elements, and advanced strategies to optimize performance in various applications.

Subject: BTME803T1 Design of Material Handling System

CO	CO Statement
1	List the constructional and operational characteristics of a trolley and identify its design features.
2	Recall the constructional and operational characteristics of a ropeway and describe its design aspects..
3	Define the constructional and operational characteristics of cranes and explain their design features.
4	Recognize the concept of an AGV bulk solid conveying system and outline its key principles.
5	Apply the concepts of gravity, powered, and vibrating conveying systems to derive calculations required for their implementation.

Subject: BEME803T2 ELECTRIC & HYBRID VEHICLE

CO	CO Statement
1	Explain the basics of electric and hybrid electric vehicles, their architecture, technologies and vehicle dynamics fundamental.
2	Analyze the use of different power electronics converters in hybrid electric vehicles.
3	Interpret the working of different electrical equipment in electric vehicles and hybrid vehicle.
4	Explain the use of different energy storage systems used for hybrid electric vehicles, their control techniques and select appropriate energy balancing technology.
5	Discuss the control and configuration of HEV charging stations.

Subject: BEME803T4 HEATING VENTILATION AND AIR-CONDITIONING

CO	CO Statement
1	Explain the most important concepts about HVACR and operation of HVAC systems.
2	Estimate the heating and cooling load of a building.

COURCE OUTCOMES(CO)

Subject: BEME803T4 HEATING VENTILATION AND AIR-CONDITIONING	
CO	**CO Statement**
3	Analysis and design different air and water distribution systems related to HVAC systems.
4	Evaluate the performance of an HVAC system and the energy use of a building.
5	Estimate building Energy and Modeling Methods.

Subject: BTME803T5 Total Quality Management	
CO	**CO Statement**
1	To describe Quality concepts.
2	Summarize Total Quality Principles to employees and supplier partnership.
3	Describe Statistical Process Control and Process Capability for enhancement of quality.
4	Analyze the tools for Total Quality Principles .
5	Formulate Quality System , Quality Audits, Leadership & quality council & overview of software used for TQM.

Subject: BTME804T1 Additive Manufacturing	
CO	**CO Statement**
1	Explain the evolution of additive manufacturing (AM) and its importance in digital manufacturing. Also,create AM process chain for product.
2	Describe and pre-process a model for additive manufacturing.
3	Illustrate liquid based and solid based additive manufacturing processes
4	Explain powder based additive manufacturing process
5	Demonstrate the additive manufactured parts.

Subject: BEME804T2 ENERGY CONSERVATION AND MANAGEMENT	
CO	**CO Statement**
1	Describe the classification, pricing, security, and conservation of energy while analyzing India's energy scenario and regulatory framework.
2	Explain energy management principles and audit methodologies while analyzing financial techniques for investment appraisal and energy performance optimization.
3	Energy energy efficiency principles in boilers, cooling towers, and furnaces while analyzing performance evaluation methods and energy conservation opportunities.

COURCE OUTCOMES(CO)

Subject: BEME804T2 ENERGY CONSERVATION AND MANAGEMENT	
CO	**CO Statement**
4	Describe energy efficiency principles in compressed air, HVAC, and pumping systems while analyzing performance factors and conservation opportunities.
5	Explain global environmental issues such as ozone depletion and climate change, while analyzing international responses and sustainable development strategies.

Subject: BEME804T3 GREEN & SUSTAINABLE MANUFACTURING	
CO	**CO Statement**
1	To identify with the current global and Indian manufacturing scenario and challenges with respect to environment.
2	Explain with the green manufacturing concept and apply its need in global and Indian context.
3	Analyze and apply with the various Key GM Operational Technologies, approaches, strategies and Elements.
4	To identify with the International and National Green regulations, International Treaties supporting GM
5	To identify with the Conceptual GM model. Performance measurement tools & Green economics for GM, Analytical Tools for Sustainability Assessment, Life Cycle Assessment.