



Course Outcome

Mathematics-III (BEME301T)

C01	Apply Laplace Transform to solve ordinary differential equations, Integral equations and Integro-differential Equations.
C02	Apply Fourier series in the analysis of periodic functions in terms sine and cosine encountered in engineering problems and Fourier Transform to solve integral equations.
C03	Learn the concept of differentiating, integrating and expanding of analytic functions in complex numbers and their applications such as evaluation of integrals of complex functions.
C04	Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables.
C05	Analyze real world scenarios to recognize when matrices are appropriate, formulate problems about the scenarios, and creatively model these scenarios in order to solve the problems using multiple approaches.

Manufacturing Processes (BEME302T)

C01	Understand the importance of manufacturing processes, techniques of pattern making and moulding with their properties. Design gating system along with selection of different types of melting furnaces and special casting process.
C02	Get acquainted with the basic concept of joining process, welding process and its types, defects and application.
C03	Get acquainted with the forming process for metal, mechanics of forming process along with different types of rolling machine.
C04	Understand and define press working process along with its classification, types and terminology, different types of dies and introduction to shaping operation.
C05	Understand introduction to plastics, ceramics and glasses, its properties, application, forming and its shaping.

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Department of Mechanical Engineering

Engineering Thermodynamics BEME303T

C01	Explain thermodynamics concepts, relate laws of the ideal gas, identify various thermodynamic processes and apply the laws to determine the energy transfer in terms of heat and work.
C02	Explain the first law of thermodynamics and apply the law to evaluate open, closed systems, thermal components and devices.
C03	Interpret the second law of thermodynamics, entropy, and apply the law to evaluate heat engine, heat pump, and refrigerator performance.
C04	Relate various steam properties, and analyze the different types of processes using steam as working fluid to determine the energy transfer in terms of heat and work.
C05	Compare various power cycles and analyze the cycles to determine the energy transfer in terms of heat, work and efficiency.

KINEMATICS OF MACHINES (BEME304T)

C01	Perform kinematic and dynamic analysis (Displacement, Velocity, acceleration, Inertia forces) of a given mechanism using analytical and graphical method.
C02	Understand the concept of compliant mechanisms.
C03	Contrive or synthesize new mechanisms for specific requirements and Perform computeraided analysis of simple mechanisms.
C04	Construct cam profiles and analyze the follower motion.
C05	Understand Geometry of gear, its types, analysis of forces and motions of gear teeth. Study of gear trains and governors.

Machine Drawing and Solid Modeling (BEME305P)

C01	Create 2-D orthographic manual drawings as well as digital drawing using CAD software package of standard machine components
C02	Apply standard practices for creation of 2-D orthographic manual drawings as well as digital drawing using CAD software package of assembly with dimension detailing, part list and ballooning. Also perform 2-D detailing of assembly components.
C03	Create 3-D solid model and 2-D detailing of simple parts using CAD software package and perform 2-D detailing.

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Department of Mechanical Engineering

C04	Create production drawing and process sheet for standard machine components.
C05	Get hands on experience of reverse engineering process and concepts.

Computer Application/Programming (BEME306)

C01	Understand and explore concepts in basic programming like data types, input/output functions, operators, programming constructs and user defined functions.
C02	Develop capabilities of writing „C“ programs in optimized, robust and reusable code.
C03	Apply appropriate concepts of data structures like arrays, structures implement programs for various applications.

Machining Processes (BEME401T)

C01	Understand fundamentals of metal cutting
C02	Understand basic construction and operations of lathe shaping, planning
C03	Understand basics of milling and milling cutters. slotting
C04	To know about the surface finishing processes.
C05	Understand the basic of drilling, boring, reaming and broaching.

Fluid Mechanics & Hydraulic Machines BEME402T

C01	Classify and explain fluid their properties, fluid in rest condition, types of flow & flow measuring devices and mathematical application of equations on hydraulic components.
C02	Explain behavior of fluid in motion condition and application of Bernoullie's equation to fluid flow measuring devices.
C03	Apply dimensional analysis to design hydraulic machines and different losses of fluid flow through pipes.
C04	(i) classify different layout of hydro-electric power plant and (ii) analyze design characteristics of hydraulic machines i.e. turbines (impulse and reaction), Pelton turbine, Francis turbine, propeller turbine and Kaplan turbine
C05	Explain the working principle & design of Centrifugal and reciprocating pump & practical application of similitude & model testing.



Department of Mechanical Engineering

Material Science & Engineering- BEME403T

C01	Student will be capable to distinguish microstructure and analyze the effect of Crystalline nature of metals, construct and analyze Iron-Iron carbide equilibrium diagram.
C02	Student will be able to study the commercial steels.
C03	Student will be able to analyze and implement suitable heat treatment processes.
C04	Student will be able to analyze the Cast Iron.
C05	Student will be able to perceive the basics of powder Metallurgy for powder metallurgical components.

MECHANICS OF MATERIAL -BEME404T

C01	Demonstrate fundamental knowledge about various types of loading and stresses induced
C02	Draw the SFD and BMD for different types of loads and support conditions.
C03	Estimate the strain energy in mechanical elements. And analyze the deflection in beams.
C04	Can design shaft for various loading conditions.
C05	Understand theory of failure and effective designing of column and struct.

Professional Ethics - BEME405T

C01	Understand basic purpose of profession, professional ethics and various moral and social Issues.
C02	Analyze various moral issues and theories of moral development.
C03	Realize their roles of applying ethical principles at various professional levels
C04	Identify their responsibilities for safety and risk benefit analysis.
C05	Understand their roles in dealing various global issues



Heat Transfer -BEME501T

C01	Students will be able to define and compare the different modes of heat transfer and calculation of thermal resistance and heat transfer through plane and composite wall, cylinder and sphere with and without thermal contact resistances.
C02	Students will be able to apply the concept of internal heat generation for the calculation of heat transfer for plane wall, cylinder and sphere and also learn about various types of fins and their significance in steady state conduction heat transfer calculations. It will also help them to understand the concept of unsteady state heat transfer.
C03	Students will be able to select and apply appropriate empirical correlations to estimate forced convection and free convection heat transfer, for internal and external flows.
C04	Students will be able to evaluate heat transfer rate by radiation from ideal and actual surfaces and enclosures of different geometries.
C05	Students will be able to evaluate heat exchanger performance for the given geometry and boundary conditions and design suitable heat exchanger geometry to deliver a desired heat transfer rate.

Energy Conversion -I (BEME502T)

C01	Explain, classify, analyze layout of power plant, cogeneration principle of steam generators(i.e. Boilers), boiler mountings & accessories and evaluate performance parameters of boiler.
C02	Explain the concepts of fluidized bed boilers and various draught system and evaluate performance parameters of natural draught system(i.e. chimney)
C03	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
C04	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.
C05	Explain, classify steam condensers, cooling towers and evaluate performance parameters of surface condenser.



Design of Machine Elements- BEME503T

C01	Apply principals of static loading for design of Cotter joint, Knuckle joint
C02	Design bolted, welded joints, power screws & pressure vessels
C03	Design the power transmission shaft & coupling.
C04	Design components subjected to fatigue or fluctuating stresses. Also, will be able to apply principles for determining bending stresses for desing of curved beams e.g. crane hook, C-Frame.
C05	Design clutches, brakes and springs

Industrial Economics & Management- BEME504T

C01	Understand the concept of demand and supply and its relationship with the price.
C02	Relate various factors of production with reference to different economic sectors.
C03	Analyze the causes and effects of inflation and understand the market structure.
C04	Acquire knowledge of various functions of management and marketing management.
C05	Perceive the concept of financial management for the growth of business.

Automobile Engineering –I (BEME505T)

C01	Demonstrate the vehicle construction, chassis, fuel supply system, lubrication system and cooling system in automobile.
C02	Illustrate the principle and working of Transmission system and clutch, gear box, rear axle drives, fluid flywheel, torque converter.
C03	Identify the steering, suspension system and brake system.
C04	Understand the applications of electrical/electronic system of automobile and wheels, tyres.
C05	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.

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Department of Mechanical Engineering

Automation In Production- BEME601T

C01	Get Acquainted With Automation, Its Type's ,Strategies , Assembly Line Balancing And Its Analysis, Methods Of Work Part Transport
C02	Recognize fundamentals and constructional features of N.C, CNC and D.N.C machines and prepare a CNC program for given part.
C03	Get Acquainted With The Robotic Configuration, Types Of Links, Joints, Grippers, Industrial Robotics And Robot Applications.
C04	Cultivate Information About Automated Material Handling Systems, Automated Storage And Retrieval System (AGVS,AS/RS) Its Analysis
C05	Get Acquainted With Automated Inspection (CAPP, CAQC, CMM) And Group Technology.
C06	Recognize CAD/CAM, CIM,FMS, Understand The Concepts Of Shop Floor Control.

Energy Conversion-II (BEME602T)

C01	Classify various types of I.C. Engines and explain the working of its various components and systems.
C02	Analyze the effect of various operating variables on engine performance
C03	Understand the working of Gas Turbine and Jet propulsion system
C04	Analyze the vapour compression refrigeration system and psychometric process.
C05	Understand the working of various types of compressors

Dynamics of Machines- BEME603T

C01	Comprehend the machine dynamics through basic principles to interpret their application and examine near to life problems due gyroscopic effects and determine the conditionsfor stability of ships, airplanes and automobile.
C02	Analyze dynamic force conditions in planer linkages and cams to determine required driving torque condition (graphically/ analytically).
C03	Estimate the unbalanced forces due to rotating and reciprocating masses in a mechanicalsystem and calculate (graphically/ analytically) the balancing masses required for safe/smooth operation of these mechanical systems.

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Department of Mechanical Engineering

C04	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.
C05	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.

(Elective-I) Operation Research- BEME604T

C01	Recognize the importance and value of Operations Research and mathematical modeling in solving practical problems in industry.
C02	Convert given situation to mathematical form and determine optimal settings.
C03	Understand Operations Research models and apply them to real-life problems;
C04	Manage projects for minimum total cost and smooth level of resources.
C05	Make decisions related to age of replacement of equipment
C06	Develop simulation of real life system to analyze and optimize system concerned.

Advanced Manufacturing Techniques- BEME605T

C01	Understand and compare the different Non-Traditional machining process with their need, economics and application as well as historical development. Understand the basics of High speed grinding, Hot and Cold machining.
C02	Understand the basics of Abrasive Jet Machining (AJM), Ultrasonic Machining process and Water Jet Machining.
C03	Get acquainted with the Electro-Chemical Machining, Electrochemical Grinding, Electric Discharge Machining. Get acquainted with the Electron Beam, Laser Beam and Plasma Arc Machining.
C04	Know the basics of unconventional welding techniques and Solid Phase welding techniques.
C05	Get acquainted with the basics of advanced casting processes.



Department of Mechanical Engineering

Environmental Studies- BEME608T

1	This course provides an integrated and interdisciplinary approach to the study of environment and solutions to environmental problems. This course will spread awareness among the students about environmental issues and shall alert them to find solutions for sustainable development.
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INDUSTRIAL ENGINEERING- BEME701T

C01	The course objective is to introduce the discipline and profession of industrial engineering. This course provides knowledge and skills for designing work system as a form of integrated system, planning and controlling of a production system, ability to design a facility lay out.
C02	To solve problem and organization of design process and value engineering and skill to apply methods in value engineering to improve the competitiveness of product/service, to apply ergonomics principles in industry and for planning and controlling maintenance system.

Automobile Engineering –I (BEME505T)

C01	Demonstrate the vehicle construction, chassis, fuel supply system, lubrication system and cooling system in automobile.
C02	Illustrate the principle and working of Transmission system and clutch, gear box, rear axle drives, fluid flywheel, torque converter.
C03	Identify the steering, suspension system and brake system.
C04	Understand the applications of electrical/electronic system of automobile and wheels, tyres.

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C05	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.
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COMPUTER AIDED DESIGN- BEME703T

C01	This course is aimed to develop; a framework where the designer works with computer to develop an Engineering system, CAD system that leads to effective use of computers in the entire design process, computer graphics & procedure about the geometrical modelling of engineering objects, controls on modeling parameter and graphics visualization techniques using computer.
C02	At the end of this course, student will appreciate the importance of computers, computer graphics & numerical methods and will be able to use them for modeling, designing & analysis of mechanical components.

ENERGY CONVERSION – II (BEME704T)

C01	This course is aimed to develop; a framework where the designer works with computer to develop an Engineering system, CAD system that leads to effective use of computers in the entire design process, computer graphics & procedure about the geometrical modelling of engineering objects, controls on modeling parameter and graphics visualization techniques using computer.
C02	At the end of this course, student will appreciate the importance of computers, computer graphics & numerical methods and will be able to use them for modeling, designing & analysis of mechanical components.



DESIGN OF MECHANICAL DRIVES - BEME705T

CO1	This course is aimed to make the students conversant with design principles & design procedure of mechanical drives like coupling, flywheel, belt drive, chain drive, gear drive, wire rope etc..
CO2	At the end of this course, student will be able to select and design appropriate mechanical drive/s.

INDUSTRIAL MANAGEMENT- BEME801T

CO1	This course is designed to understand the concept of administration & management; basic Management Functions, the recruitment, man power planning at industry as well as various aspect governing with industrial acts, to understand plant management, Lay-outs, Industrial safety programes, classification of production systems.
CO2	It will also aware the students regarding concept of finance management, various sources of generating the finance and to understand the books of account & also about recent trends in management

REFRIGERATION AND AIRCONDITIONING- BEME802T

CO1	This course is designed to understand the basic concept of refrigeration and air conditioning. Students will be able to understand the non- conventional refrigeration system and cryogenics through the knowledge of air conditioning which includes psychometric, heat load calculations, design of air conditioning system & transmission and distribution of conditioned air.
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C02	At the end of the course, students will be conversant with domestic, commercial and industrial applications of refrigeration and air conditioning.
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ADVANCED MANUFACTURING TECHNIQUE- BEME803T

C01	This course is designed to provide students with an overview of a wide variety of non-traditional machining processes for processing of engineering materials. Students will learn principles, operations, capabilities, process parameters, economics and application of various non-traditional machining processes, various unconventional welding techniques, control parameters & also High Energy Rate Forming Process.
C02	Upon completion of this course, students shall understand the importance of non-traditional machining processes, unconventional welding techniques and be able to select and apply suitable processes for an engineering product.

ADVANCED MANUFACTURING TECHNIQUE- BEME804T

C01	This course is designed to provide students with an overview of a wide variety of non-traditional machining processes for processing of engineering materials. Students will learn principles, operations, capabilities, process parameters, economics and application of various non-traditional machining processes, various unconventional welding techniques, control parameters & also High Energy Rate Forming Process
C02	Upon completion of this course, students shall understand the importance of non-traditional machining processes, unconventional welding techniques and be able to select and apply suitable processes for an engineering product.