MECHANICS OF MATERIALS

(BME301)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Understand the concepts of stress and strain in simple and compound bars.	L1, L2, L3
CO2	Explain the importance of principal stresses and principal planes & Analyse cylindrical pressure vessels under various loadings	L1, L2, L3
CO3	Apply the knowledge to understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.	L1, L2, L3
CO4	Evaluate stresses induced in different cross-sectional members subjected to shear loads.	L1, L2, L3
CO5	Apply basic equation of simple torsion in designing of circular shafts & Columns.	L1, L2, L3

MANUFACTURING PROCESS (IPCC)

(BME302)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Describe the casting process and prepare different types of cast products. Acquire knowledge on Pattern, Core, Gating, Riser system and to use Jolt, Squeeze, and Sand Slinger Moulding machines.	L1 & L2
CO2	Compare the Gas fired pit, Resistance, Coreless, Electrical and Cupola Metal Furnaces. Compare the Gravity, Pressure die, Centrifugal, Squeeze, slush and Continuous Metal mold castings.	L1 & L2
CO3	Understand the Solidification process and Casting of Non-Ferrous Metals.	L1 & L2
CO4	Describe the Metal Arc, TIG, MIG, Submerged and Atomic Hydrogen Welding processes etc. used in manufacturing.	L1 & L2
CO5	Describe the methods of different joining processes and thermal effects in joining process.	L1 & L2

MATERIAL SCIENCE AND ENGINEERING (IPCC)

(BME303)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Understand the atomic arrangement in crystalline materials and describe the periodic arrangement of atoms in terms of unit cell parameters.	L1 & L2
CO2	Understand the importance of phase diagrams and the phase transformations.	L1 & L2
CO3	Know various heat treatment methods for controlling the microstructure.	L1 & L2
CO4	Correlate between material properties with component design and identify various kinds of defects.	L1 & L2
CO5	Apply the method of materials selection, material data and knowledge sources for computer-aided selection of materials.	L1 & L2

BASIC THERMODYNAMICS

(BME304)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Explain fundamentals of thermodynamics and evaluate energy interactions across the boundary of thermodynamic systems.	L1, L2, L3
CO2	Apply 1st law of thermodynamics to closed and open systems and determine quantity of energy transfers.	L1, L2, L3
CO3	Evaluate the feasibility of cyclic and non-cyclic processes using 2nd law of thermodynamics.	L1, L2, L3
CO4	Apply the knowledge of entropy, reversibility and irreversibility to solve numerical problems and Interpret the behaviour of pure substances and its application in practical problems.	L1, L2, L3
CO5	Recognize differences between ideal and real gases and evaluate thermodynamic properties of ideal and real gas mixtures using various relations.	L1, L2, L3

Electric and Hybrid Vehicle Technology

(BME306A)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Understand the architecture and vehicle dynamics of electric and hybrid vehicles	L1, L2, L3
CO2	Analyze the power management systems for electric and hybrid vehicles	L1, L2, L3
CO3	Understand different motor control strategies for electric and hybrid vehicles	L1, L2, L3
CO4	Analyze various components of electric and hybrid vehicles with environment concern.	L1, L2, L3
CO5	Understand the domain related grid interconnections of electric and hybrid vehicle.	L1, L2, L3

APPLIED THERMODYNAMICS

(BME401)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Analyse air standard cycle to evaluate the performance of I C engines.	L1, L2, L3
CO2	Analyze the gas power cycles to evaluate the overall efficiency of gas turbine plant.	L1, L2, L3
CO3	Apply thermodynamic concepts to analyze the performance of vapour power cycles.	L1, L2, L3
CO4	Analyze the vapour compression and vapour absorption systems to improve refrigeration.	L1, L2, L3
CO5	Determination of various parameters of air compressors and steam nozzles.	L1, L2, L3

MACHINING SCIENCE AND METROLOGY

(BME402)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Analyze various cutting parameters in metal cutting.	L1 & L2
CO2	Understand the construction of machines & machine tools and compute the machining time of various operations.	L1 & L2
CO3	Understand the concept of Temperature in Metal Cutting, forms of wear in metal cutting and Cutting fluids.	L1 & L2
CO4	Understand the objectives of metrology, methods of measurement, standards of measurement & various measurement parameters. Explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design.	L1 & L2
CO5	Understand the working principle of different types of comparators, gauges, angular Measurements.	L1 & L2

FLUID MECHANICS (IPCC)

(BME403)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Identify and calculate the key fluid properties used in the analysis of fluid behavior.	L1, L2, L3
CO2	Understand and apply the principles of pressure, buoyancy and floatation.	L1, L2, L3
CO3	Apply the knowledge of fluid dynamics while addressing problems of mechanical and chemical engineering.	L1, L2, L3
CO4	Understand the concept of boundary layer in fluid flow and apply dimensional analysis to form dimensionless numbers in terms of input output variables and the basic concept of compressible flow and CFD.	L1, L2, L3
CO5	Conduct basic experiments of fluid mechanics and understand the experimental uncertainties.	L1, L2, L3

NON TRADITIONAL MACHINING

(BME405A)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	**Describe** non-traditional machining process and **compare** with Traditional machining process. R**ecognize** the need for Non-traditional machining process.	L1, L2
CO2	**Describe** the constructional features, performance parameters, process characteristics, applications, advantages, and limitations of USM, AJM and WJM.	L1, L2
CO3	**Characterize** the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages, and limitations.	L1, L2
CO4	**Illustrate** the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM, PAM, LBM & EBM.	L1, L2