COURSE OUTCOMES - 2022 SCHEME

3rd SEMESTER

Subject:	Mechanics of Materials		
Subject Code:	BME301	NBA Code:	ME201
CO1	Understand the concepts of stress and strain in simple and compound bars.		
CO2	Explain the importance of principal stresses and principal planes & Analyse cylindrical pressure vessels under various loadings		
CO3	Apply the knowledge to understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.		
CO4	Evaluate stresses induced in different cross-sectional members subjected to shear loads		
CO5	Apply basic equation of simple torsion in designing of circular shafts & Columns.		

Subject:	Manufacturing Process		
Subject Code:	BME302	NBA Code:	ME202
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.		
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.		
CO3	Understand the Solidification process and Casting of Non-Ferrous Metals.		
CO4	Describe the Metal Arc, TIG, MIG, Submerged and Atomic Hydrogen Welding processes etc. used in manufacturing.		
CO5	Describe the methods of different joining processes and thermal effects in joining process.		

Subject:	Material Science and Engineering		
Subject Code:	BME303	NBA Code:	ME203
CO1	Understand the atomic arrangement in crystalline materials and describe the periodic arrangement of atoms in terms of unit cell parameters.		
CO2	Understand the importance of phase diagrams and the phase transformations.		
CO3	Explain various heat treatment methods for controlling the microstructure.		
CO4	Correlate between material properties with component design and identify various kinds of defects.		
CO5	Apply the method of materials selection, material data and knowledge sources for computer aided selection of materials.		

Subject:	Basic Thermodynamics		
Subject Code:	BME304	NBA Code:	ME204
CO1	Explain fundamentals of thermodynamics and evaluate energy interactions across the boundary of thermodynamic systems.		
CO2	Apply 1st law of thermodynamics to closed and open systems and determine quantity of energy transfers.		
CO3	Evaluate the feasibility of cyclic and non-cyclic processes using 2nd law of thermodynamics		
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.		
CO5	Recognize differences between ideal and real gases and evaluate thermodynamic properties of ideal and real gas mixtures using various relations.		

Subject:	Introduction to Modelling and Design for Manufacturing		
Subject Code:	BMEL305	NBA Code:	ME205
CO1	Create and modify a form based design.		
CO2	Use design tools for moulded parts.		
CO3	Demonstrate proficiency in the set up & creation of a design.		
CO4	Simulate the assembly of machine components in 3D environment.		

Subject:	Smart Materials & Systems		
Subject Code:	BME306B	NBA Code:	ME206
CO1	Apply the knowledge for materials characterization		
CO2	Evaluate the materials based on actuation		
CO3	Select and justify appropriate materials for specific application		

Subject:	Social Connect and Responsibility		
Subject Code:	BSCK307	NBA Code:	ME207
CO1	Communicate and connect to the surrounding.		
CO2	Create a responsible connection with the society.		
CO3	Involve in the community in general in which they work.		
CO4	Notice the needs and problems of the community and involve them in problem –solving, Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.		
CO5	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.		

Subject:	Advanced Python Programming Lab		
Subject Code:	BME358A	NBA Code:	ME208
CO1	Develop algorithmic solutions to simple computational problems		
CO2	Develop and execute simple Python programs.		
CO3	Use functions to decompose a Python program.		
CO4	Process compound data using Python data structures.		
CO5	Utilize Python packages in developing software applications.		

Subject:	National Service Scheme		
Subject Code:	BNSK359	NBA Code:	ME209
CO1	Understand the importance of his / her responsibilities towards society.		
CO2	Analyse the environmental and societal problems/issues and will be able to design solutions for the same.		
CO3	Evaluate the existing system and to propose practical solutions for the same for sustainable development.		
CO4	Implement government or self-driven projects effectively in the field.		
CO5	Develop capacity to meet emergencies and natural disasters & practice national integration and social harmony in general.		

Subject:	Physical Education		
Subject Code:	BPEK359	NBA Code:	ME210
CO1	Understand the fundamentals concepts and skills of physical education, health, nutrition &fitness.		
CO2	Feminization of health related exercises, sports for overall growth and development.		
CO3	Create a foundation for the professionals in physical education and sports.		
CO4	Participate in the completion at state/national/international levels.		
CO5	Create consciousness among the students on health ,fitness and wellness in developing & maintaining a healthy lifestyles.		

COURSE OUTCOMES - 2022 SCHEME

4th SEMESTER

Subject:	Applied Thermodynamics		
Subject Code:	BME401	NBA Code:	ME211
CO1	Analyse air standard cycle to evaluate the performance of I C engines.		
CO2	Analyze the gas power cycles to evaluate the overall efficiency of gas turbine plant.		
CO3	Apply thermodynamic concepts to analyze the performance of vapour power cycles.		
CO4	Analyze the vapour compression and vapour absorption systems to improve refrigeration.		
CO5	Determination of various parameters of air compressors and steam nozzles.		

Subject:	Machining Science & Metrology-Integrated		
Subject Code:	BME402	NBA Code:	ME212
CO1	Analyze various cutting parameters in metal cutting.		
CO2	Understand the construction of machines & machine tools and compute the machining time of various operations.		
CO3	Understand the concept of Temperature in Metal Cutting, forms of wear in metal cutting and Cutting fluids		
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		
CO5	Understand the working principle of different types of comparators, gauges, angular Measurements		

Subject:	Fluid Mechanics-Integrated		
Subject Code:	BME403	NBA Code:	ME213
CO1	Identify and calculate the key fluid properties used in the analysis of fluid behavior.		
CO2	Understand and apply the principles of pressure, buoyancy and floatation		
CO3	Apply the knowledge of fluid dynamics while addressing problems of mechanical and chemical engineering.		
CO4	Understand the concept of boundary layer in fluid flow and apply dimensional analysis to form dimensionless numbers in terms of input output variables.		
CO5	Understand the basic concept of compressible flow and CFD, Conduct basic experiments of fluid mechanics and understand the experimental uncertainties.		

Subject:	Mechanical Measurements and Metrology lab		
Subject Code:	BME404	NBA Code:	ME214
CO1	To calibrate pressure gauge, thermocouple, LVDT, load cell, micrometer		
CO2	To measure angle using Sine Center/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/Roller set.		
CO3	To demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats		
CO4	To measure cutting tool forces using Lathe/Drill tool dynamometer, To measure Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth vernier/Gear tooth micrometer.		
CO5	To measure surface roughness using Tally Surf/ Mechanical Comparator.		

Subject:	Non Traditional Machining		
Subject Code:	BME405A	NBA Code:	ME215
CO1	Describe non-traditional machining process and compare with Traditional machining process. Recognize the need for Non-traditional machining process.		
CO2	Describe the constructional features, performance parameters, process characteristics, applications, advantages, and limitations of USM, AJM and WJM.		
CO3	Characterize the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages, and limitations.		
CO4	Illustrate the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM		

Subject:	Introduction to AI & ML		
Subject Code:	BME456A	NBA Code:	ME216
CO1	Understand the implementation procedures for the machine learning algorithms		
CO2	Design Java/Python programs for various Learning algorithms.		
CO3	Apply appropriate data sets to the Machine Learning algorithms		
CO4	Identify and apply Machine Learning algorithms to solve real world problems		
CO5	Examine working of PDF and word file formats.		

Subject:	Biology For Engineers		
Subject Code:	BBOK407	NBA Code:	ME217
CO1	Elucidate the basic biological concepts via relevant industrial applications and case studies.		
CO2	Evaluate the principles of design and development, for exploring novel bioengineering projects.		
CO3	Corroborate the concepts of biomimetic for specific requirements.		
CO4	Think critically towards exploring innovative bio based solutions for socially relevant problems.		

Subject:	Universal human values course		
Subject Code:	BUHK408	NBA Code:	ME218
CO1	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.		
CO2	They would have better critical ability.		
CO3	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).		
CO4	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.		

Subject:	National Service Scheme (NSS)		
Subject Code:	BNSK459	NBA Code:	ME219
CO1	Understand the importance of his / her responsibilities towards society.		
CO2	Analyse the environmental and societal problems/issues and will be able to design solutions for the same.		
CO3	Evaluate the existing system and to propose practical solutions for the same for sustainable development.		
CO4	Implement government or self-driven projects effectively in the field.		
CO5	Develop capacity to meet emergencies and natural disasters & practice national integration and social harmony in general.		

Subject:	Physical Education		
Subject Code:	BPEK459	NBA Code:	ME220
CO1	Understand the ethics & moral values in sports & athletics.		
CO2	Perform in the selected sports or athletics of student choice.		
CO3	Understand the roles and responsibilities of organization & administration of sports & games.		