JIT
(Accredited by NAAC)
Jawahar Education Society's,
INSTITUTE OF TECHNOLOGY,
MANAGEMENT & RESEARCH, NASHIK.
(Approved by AICTE, New Delhi, DTE, Government of Maharashtra, Affiliated to Savitribai Phule Pune University)

BE Mechanical 2019Pattern

Course Outcomes

Department of Mechanical Engineering

Course Outcomes (CO)

Syllabus Pattern:-2019

Class:-BE Semester:- I

Sr. No	Subject	Course Outcomes (CO)
1	Heating, Ventilation, Air Conditioning and Refrigeration (402041)	CO1. ANALYSE different air-craft refrigeration systems and EXPLAIN the properties, applications and environmental issues of different refrigerants. CO2. ANALYSE multi pressure refrigeration system used for refrigeration applications. CO3. DISCUSS types of compressors, condensers, evaporators and expansion valves along with regulatory and safety controls and DESCRIBES Transcritical and ejector refrigeration systems. CO4. ESTIMATE cooling load for air conditioning systems used with concern of design conditions and indoor quality of air. CO5. DESIGN air distribution system along with consideration of ventilation and infiltration. CO6. EXPLAIN the working of types of desiccants, evaporative, thermal storage, radiant cooling, clean room and heat pump systems.
2	Dynamics of Machinery (402042)	CO1. APPLY balancing technique for static and dynamic balancing of multi cylinder inline and radial engines. CO2. ANALYZE the gyroscopic couple or effect for stabilization of Ship, Airplane and Four wheeler vehicles. CO3. ESTIMATE natural frequency for single DOF un-damped & damped free vibratory systems. CO4. DETERMINE response to forced vibrations due to harmonic excitation, base excitation and excitation due to unbalance forces. CO5. ESTIMATE natural frequencies, mode shapes for 2 DOF un-damped free longitudinal and torsional vibratory systems. CO6. DESCRIBE noise and vibration measuring instruments for industrial / real life applications along with suitable method for noise and vibration control.
3	Turbo machinery (402043)	CO 1: VALIDATE impulse moment principle using flat, inclined and curved surfaces and INVESTIGATE performance characteristics of hydraulic turbines. CO 2: DETERMINE performance parameters of impulse and reaction steam turbine along with discussion of nozzles, governing mechanism & losses. CO 3: MEASURE performance parameters of single & multistage centrifugal pumps along with discussion of cavitation and selection. CO 4: EXPLAIN performance parameters of centrifugal compressor along with discussion of theoretical aspects of axial compressor.

Sr. No	Subject	Course Outcomes (CO)
4	Industrial Engineering (402044D)	CO1. EVALUATE the productivity and IMPLEMENT various productivity improvement techniques. CO2. APPLY work study techniques and UNDERSTANDS its importance for better productivity. CO3. DEMONSTRATE the ability to SELECT plant location, appropriate layout and material handling equipment. CO4. USE of Production planning and control tools for effective planning, scheduling and managing the shop floor control. CO5. PLAN inventory requirements and EXERCISE effective control on manufacturing requirements. CO6. APPLY Ergonomics and legislations for human comfort at work place and UNDERSTANDS the role of value engineering in improving productivity.
5	Additive Manufacturing (402045C)	CO1. USE and CLASSIFY the fundamentals of Additive Manufacturing Technologies for engineering applications. CO2. IDENTIFY and CATEGORIZE the methodology to manufacture the products using light-based photo-curing, LASER based technologies and STUDY their applications, benefits. CO3. IDENTIFY and CATEGORIZE the methodology to manufacture the products using extrusion-based deposition, inkjet-based technologies and STUDY their applications, benefits. CO4. SYNTHESIZE, RECOMMEND and DESIGN the suitable material and process for fabrication and build behavior of verities of product. CO5. DESIGN and CONSTRUCT the AM equipment's for appropriate applications and the input CAD model. CO6. DEVELOP the knowledge of additive manufacturing for various real-life applications.
6	Data Analytics Laboratory (402046)	CO1: UNDERSTAND the basics of data analytics using concepts of statistics and probability. CO2: APPLY various inferential statistical analysis techniques to describe data sets and withdraw useful conclusions from acquired data set. CO3: EXPLORE the data analytics techniques using various tools CO4: APPLY data science concept and methods to solve problems in real world context CO5: SELECT advanced techniques to conduct thorough and insightful analysis and interpret the results
7	402047: Project (Stage I)	CO1. Implement systems approach. CO2. To conceptualize a novel idea / technique into a product. CO3. To think in terms of a multi-disciplinary environment. CO4. To take on the challenges of teamwork, and document all aspects of design work. CO5. To understand the management techniques of implementing a project.

Department of Mechanical Engineering

Course Outcomes (CO)

Syllabus Pattern:-2019

Class:-BE Semester:- II

Sr. No	Subject	Course Outcomes (CO)
1	Computer Integrated Manufacturing (402048)	CO1. EXPLAIN CIM and factory automation. CO2. UNDERSTAND the integration of hardware and software elements for CIM CO3. APPLY CNC program for appropriate manufacturing techniques. CO4. ANALYZE processes planning, quality and MRP integrated with computers. CO5. INTERPRET flexible, cellular manufacturing and group technology. CO6. ANALYZE the effect of IOT, Industry-4.0 and cloud base manufacturing.
2	Energy Engineering (402049)	CO1: EXPLAIN the power generation scenario, the layout components of thermal power plant and ANALYZE the improved Rankine cycle. CO2: ANALYZE the performance of steam condensers, cooling tower system; RECOGNIZE an environmental impact of energy systems and methods to control the same. CO3: EXPLAIN the layout, component details of diesel engine plant, hydel and nuclear energy systems. CO4: ANALYZE gas and improved power cycles. CO5: EXPLAIN the fundamentals of renewable energy systems. CO6: EXPLAIN basic principles of energy management, storage and economics of power generation.
3	Energy Audit and Management (402050B)	CO1. EXPLAIN the energy need and role of energy management. CO2. CARRY OUT an energy audit of the Institute/Industry/Organization CO3. ASSESS the ENCON opportunities using energy economics CO4. ANALYSE the energy conservation performance of Thermal Utilities CO5. ANALYSE the energy conservation performance of Electrical Utilities CO6. EXPLAIN the energy performance improvement by Cogeneration and WHR method

Sr. No	Subject	Course Outcomes (CO)
4	Renewable Energy Technologies (402051)	1. DESCRIBE fundaments, needs and scopes of renewable energy systems. 2. EXPLAIN performance aspects of flat and concentric solar collectors along with applications. 3. DESIGN solar photovoltaic system for residential applications. 4. DESIGN AND ANALYSIS of wind energy conversion system. 5. APPLY Installation practices of Wind and Solar Photovoltaic Systems for grid connection. 6. DETERMINE performance parameters of bio-energy conversion systems.
5	Mechanical Systems Analysis Laboratory (402052)	CO1. DEVELOP an understanding of the Systems Engineering Process and the range of factors that influence the product need, problem-specific information collection, Problem Definition, Task Specification, Solution Concept inception, Concept Development, System's Mathematical Modelling, Synthesis, Analysis, final solution Selection, Simulation, Detailed Design, Construction, Prototyping, Testing, fault-finding, Diagnosis, Performance Analysis, and Evaluation, Maintenance, Modification, Validation, Planning, Production, Evaluation and use of a system using manual calculation, computational tools to automate product development process, redesign from customer feedback and control of technological systems. CO2. ILLUSTRATE the concepts and USE the developed skill-set of use of computational tools (FEA, CFD, MBD, FSI, CAE) to automate the complete product development process. CO3. EVALUATE the knowledge of new developments and innovations in technological systems to carry forward to next stage of employment after passing your Undergraduate Degree Examination. CO4. APPRAISE how technologies have transformed people's lives and can be used to SOLVE challenges associated with climate change, efficient energy use, security, health, education and transport, which will be coming your ways in the coming future. CO5. PRIORITIZE the concept of quality and standards, including systems reliability, safety and fitness for the intended purpose. CO6. INVENT yourself to face the challenges of future technologies and their associated Problems.
6	Project (Stage II) (402053)	CO1. Implement systems approach. CO2. To conceptualize a novel idea / technique into a product. CO3. To think in terms of a multi-disciplinary environment. CO4. To take on the challenges of teamwork, and document all aspects of design work. CO5. To understand the management techniques of implementing a project.