

K. D. K. COLLEGE OF ENGINEERING
Department Of Mechanical Engineering

COURSE OUTCOMES
SEMESTER-VIII

Industrial Engineering (BTME801T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Understanding the concept of productivity and method study.

CO2 Ability to measure work time and design ergonomic system.

CO3 To understand the concept of forecasting and breakeven analysis.

CO4 To analysis maintenance and reliability of equipments.

CO5 To understand various quality control tools and techniques.

Elective – IV: Finite Element Method (BTME802T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Understand the application of fundamentals of solid mechanics for evaluation of structural problems for evaluation of Point load, body force, traction and torsional loads.

CO2 Analyze the application and formulation of the basic finite elements for static and truss.

CO3 Analyze the beam subjected to transverse loading condition.

CO4 Apply the mathematical models for the solution of common engineering problems using finite element methods i.e., formulation of simple & complex problems using finite elements and to develop the ability to generate the governing finite element equations for systems regulated by partial differential equations.

CO5 Remember the significance and difference between the formulation and application of thermal engineering problems using 1D & 2D finite elements.

Elective – IV: Finite Element Method (BTME802P) Syllabus (Practical)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Analyze the finite element problems using commercial software and understand the fundamental use of finite element preprocessor, solver and post-processor.

CO2 Demonstrate the ability to evaluate and interpret Finite Element Analysis results for the design and evaluation of 1D and 2D finite element formulations.

CO3 Understand the Finite Element Modeling aspects of the Frequency response problem for solving engineering design problems.

Elective – IV: Computer Integrated Manufacturing (BTME802T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 To understand integration of business function with manufacturing planning and control.

CO2 To apply fundamentals of robotics or industrial applications.

CO3 To develop CNC programs for manufacturing applications.

- CO4 To understand the process of Group technology for Flexible manufacturing system.
CO5 Get Acquainted With Automated Inspection (CAPP, CAQC, CMM) And Group Technology

Elective – IV: Computer Integrated Manufacturing (BTME802P) Syllabus (Practical)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Ability to Recognize automation and CIM ,CIM wheel, hardware, software, components of CIM
CO2 The student will have ability to apply fundamentals of G.T and FMS
CO3 The student will have ability to apply fundamentals of CAPP and CAQC
CO4 The student will have ability to develop CNC programs for manufacturing applications.

Elective – IV: Refrigeration & Air-conditioning (BTME802T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Understand the basics concepts of refrigeration, and Analyze refrigeration cycle and refrigerants.
CO2 Understand the concept of vapour absorption refrigeration, air refrigeration system and cryogenics.
CO3 Understand the concept of psychrometry and analyze heat load calculations.
CO4 Understand the concept of air- distribution and air handling units
CO5 Understand the design and selection of AC System. Control devices for air-conditioning systems.

Elective – IV: Refrigeration & Air-conditioning (BTME802P) Syllabus (Practical)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Evaluate the performance of vapour compression refrigeration systems.
CO2 Analyse the components of refrigeration system and Absorption Refrigeration System.
CO3 Synthesize the concept of compound refrigeration system.
CO4 Understand the maintenance and analysis of refrigeration system.
CO5 Identify the concept of Psychrometry and comfort air conditioning.

Elective – IV: CNC & Robotics (BTME802T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Apply basic concepts of NC, CNC and DNC
CO2 Apply programme using manual part programming technique and APT for CNC lathe and machine.
CO3 Identify the basic fundamentals of industrial robots
CO4 Design kinematics of 2 DOF and 3 DOF of 2D manipulators
CO5 Select of appropriate robot for particular application

Elective – IV: CNC & Robotics (BTME802P) Syllabus (Practical)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Understand the programming of CNC and Robotic system.
- CO2 understand advanced material handling system
- CO3 Recognize automation, sensors and controller technology

Elective – V: Heating Ventilation and Air-conditioning (BTME803T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Explain the most important concepts about HVACR and operation of HVAC systems.
- CO2 Estimate the heating and cooling load of a building.
- CO3 Analyse and design different air and water distribution systems related to HVAC systems
- CO4 Evaluate the performance of an HVAC system and the energy use of a building.
- CO5 Estimate Building Energy and Modeling Methods

Elective – V: Electric & Hybrid Vehicles (BTME803T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Explain the basics of electric and hybrid electric vehicles, their architecture, technologies and vehicle dynamics fundamentals.
- CO2 Analyze the use of different power electronics converters in hybrid electric vehicles.
- CO3 Interpret the working of different electrical equipment in electric vehicles and hybrid vehicle configurations
- CO4 Explain the use of different energy storage systems used for hybrid electric vehicles, their control techniques, and select appropriate energy balancing technology
- CO5 Understand the control and configurations of HEV charging station

Elective – V: Design of Material Handling System (BTME803T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

- CO1 Constructional and operational characteristics and design of trolley.
- CO2 Constructional and operational characteristics and design of ropeway.
- CO3 Constructional and operational characteristics and design of cranes.
- CO4 Concept of AGV bulk solid conveying system.
- CO5 Concept of Gravity ,powered and vibrating conveying system.

Elective – V: Total Quality Management (BTME803T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 To develop understanding of Quality concepts.

CO2 practically implement the Total Quality Principles to employees and supplier partnership.

CO3 Understanding of Statistical Process Control and Process Capability for enhancement of quality.

CO4 practically implement the tools for Total Quality Principles .

CO5 Develop Understanding of Quality System , Quality Audits, Leadership & quality council & overview of software used for TQM.

Elective – VI: Industrial Internet of Things (IOT) (BTME804T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 To select sensors as per the industry based IoT applications including in-sensor processing, data conditioning, mounting methods etc.

CO2 To design communication technologies on the basis of data transfer rate, power/energy requirements and throughput requirements.

CO3 To implement the key enablers of industrial IoT systems such as AR, VR, cloud computing, application softwares in the field of industrial IoT.

CO4 To design predictive maintenance strategy for the critical processes of the industry by using IoT concept to reduce the production loss of the industry.

CO5 To apply the IoT concepts in building solutions to industrial problems.

Elective – VI: Additive Manufacturing (BTME804T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Explain the evolution of additive manufacturing (AM) and its importance in digital manufacturing. Also, create AM process chain for product.

CO2 Create and pre-process a model for additive manufacturing.

CO3 Explain liquid based and solid based additive manufacturing processes

CO4 Explain powder based additive manufacturing process

CO5 Post process the additive manufactured parts.

Elective – VI: Energy Conservation & Management (BTME804T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Identify and classify areas of energy conservation in industries.

CO2 Know the duties and responsibilities of an energy manager and energy auditor.

CO3 Analyze and modify existing working of the energy utilizing and generating machines.

CO4 Know how to use instruments in energy audit process.

CO5 Implement proper energy saving techniques in boiler, furnaces etc.

Elective – VI: Green & Sustainable Manufacturing (BTME804T) Syllabus (Theory)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Get acquainted with the current global and Indian manufacturing scenario and challenges with respect to environment

CO2 Get acquainted with the green manufacturing concept and its need in global and Indian context

CO3 Get conversant with the various Key GM Operational Technologies, approaches, strategies, and Elements

CO4 Get acquainted with International and National Green regulations,. International Treaties supporting GM

CO5 Get conversant with the Conceptual GM model. Performance measurement tools & Green economics for GM, Analytical Tools for Sustainability Assessment, Life Cycle Assessment

Project Phase II (BTME805P)

Course Outcomes

After successful completion of this course the student will be able to:

CO1 Convert their conceptual ideas into working projects .

CO2 Explore the possibility of publishing papers in journal.

CO3 Enhance their knowledge through an on-line collection of evidence, work and other information.

CO4 Ultimately promotes for inter-personal communication, punctuality, demonstration of appropriate written and oral communication skills with overall Work-Integrated Learning.

CO5 Develop an understanding of social, cultural, professional, ethical, global and environmental responsibilities of the professional Engineer.