SRI KRISHNA INSTITUTE OF TECHNOLOGY

#29, Hesaraghatta Main Road, Chimney Hills, Chikkabanavara Post, Bangalore- 560090

DEPARTMENT OF MECHANICAL ENGINEERING

Consolidated CO's of all subject

Sem 1st Academic Year 2020-2021

Engineering Graphics (18EGDL15)

- CO1: Learn and understand more about basic principles and to develop problem solving skills and implementation in technology.
- CO2: Gain Knowledge about Modern physics and quantum mechanics will update the basic concepts to implement the skills.
- CO3: Study of material properties and their applications is the prime role to understand and use in engineering applications and studies.
- CO4: Study Lasers and Optical fibers and its applications are to import knowledge and to develop skills and to use modern instruments in the engineering applications.
- CO5: Understand Crystal structure and applications are to boost the technical skills and its applications.
- CO6: Expose shock waves concept and its applications will bring latest technology to the students at the first year level to develop research orientation programs at higher semester level.
- CO7: Understand basic concepts of nanoscience and technology.

ELEMENTS OF MECHANICAL ENGINEERING(18ME15)

- CO1: Various Energy sources, Boilers, Prime movers such as turbines and IC engines, refrigeration and air-conditioning systems
- CO2: Metal removal process using Lathe, drilling, Milling Robotics and Automation.
- CO3: Fair understanding of application and usage of various engineering materials.

Sem 2nd Academic Year 2020-2021

Engineering Graphics (18EGDL25)

- CO1: Learn and understand more about basic principles and to develop problem solving skills and implementation in technology.

- CO2: Gain Knowledge about Modern physics and quantum mechanics will update the basic concepts to implement the skills.
- CO3: Study of material properties and their applications is the prime role to understand and use in engineering applications and studies.
- CO4: Study Lasers and Optical fibers and its applications are to import knowledge and to develop skills and to use modern instruments in the engineering applications.
- CO5: Understand Crystal structure and applications are to boost the technical skills and its applications.
- CO6: Expose shock waves concept and its applications will bring latest technology to the students at the first year level to develop research orientation programs at higher semester level.
- CO7: Understand basic concepts of nanoscience and technology.

ELEMENTS OF MECHANICAL ENGINEERING(18ME25)

- CO1: Various Energy sources, Boilers, Prime movers such as turbines and IC engines, refrigeration and air-conditioning systems
- CO2: Metal removal process using Lathe, drilling, Milling Robotics and Automation.
- CO3: Fair understanding of application and usage of various engineering materials.

Sem:- 3rd Academic Year 2020-2021

MECHANICS OF MATERIALS (18ME32)

CO1: Understand simple, compound, thermal stresses and strains their relations and strain energy.

CO2: Analyse structural members for stresses, strains and deformations.

CO3: Analyse the structural members subjected to bending and shear loads.

CO4: Analyse shafts subjected to twisting loads.

CO5: Analyse the short columns for stability.

BASIC THERMODYNAMICS (18ME33)

CO1: Explain fundamentals of thermodynamics and evaluate energy interactions across the boundary of thermodynamic systems.

CO2: Evaluate the feasibility of cyclic and non-cyclic processes using 2nd law of thermodynamics.

CO3: Apply the knowledge of entropy, reversibility and irreversibility to solve numerical problems and apply 1st law of thermodynamics to closed and open systems and determine quantity of energy transfers and change in properties.

CO4: Interpret the behavior 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.

MATERIAL SCIENCE (18ME34)

CO1: Understand the mechanical properties of metals and their alloys.

CO2: Analyze the various modes of failure and understand the microstructures of ferrous and nonferrous materials.

CO3: Describe the processes of heat treatment of various alloys.

CO4: Acquire the Knowledge of composite materials and their production process as well as applications.

CO5: Understand the properties and potentialities of various materials available and material selection procedures.

METAL CUTTING AND FORMING (18ME35A)

CO1: Explain the construction & specification of various machine tools.

CO2: Discuss different cutting tool materials, tool nomenclature & surface finish.

CO3: Apply mechanics of machining process to evaluate machining time.

CO4: Analyze tool wear mechanisms and equations to enhance tool life and minimize machining cost.

CO5: Understand the concepts of different metal forming processes. CO6: Apply the concepts of design of sheet metal dies to design different dies for simple sheet metal components.

COMPUTER AIDED MACHINE DRAWING(18ME36A)

CO1: Identify the national and international standards pertaining to machine drawing.

CO2: Understand the importance of the linking functional and visualization aspects in the preparation of the part drawings.

CO3: Apply limits and tolerances to assemblies and choose appropriate fits for given assemblies.

CO4: Interpret the Machining and surface finish symbols on the component drawings.

CO5: Preparation of the part or assembly drawings as per the conventions.

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MATERIAL TESTING LAB(18MEL37A)

CO1: Acquire experimentation skills in the field of material testing.

CO2: Develop theoretical understanding of the mechanical properties of materials by performing experiments.

CO3: Apply the knowledge to analyse a material failure and determine the failure inducing agent/s.

CO4: Apply the knowledge of testing methods in related areas.

CO5: Understand how to improve structure/behaviour of materials for various industrial applications.

WORKSHOP AND MACHINE SHOP PRACTICE (18MEL38A)

CO1: To read working drawings, understand operational symbols and execute machining operations.

CO2: Prepare fitting models according to drawings using hand tools- V-block, marking gauge, files, hack saw, drills etc.

CO3: Understand integral parts of lathe, shaping and milling machines and various accessories and attachments used.

CO4: Select cutting parameters like cutting speed, feed, depth of cut, and tooling for various machining operations.

CO5: Perform cylindrical turning operations such as plain turning, taper turning, step turning, thread Cutting, facing, knurling, internal thread cutting, eccentric turning and estimate cutting time.

CO6: Perform machining operations such as plain shaping, inclined shaping, keyway cutting, Indexing and Gear cutting and estimate cutting time.

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EPARTMENT OF MECHANICAL ENGINEERING

Consolidated CO's of all subject

Sem:- 4th Academic Year 2020-2021

APPLIED THERMODYNAMICS (18ME42)

CO1: Apply thermodynamic concepts to analyze the performance of gas power cycles.

CO2: Apply thermodynamic concepts to analyze the performance of vapour power cycles.

CO3: Understand combustion of fuels and performance of I C engines.

CO4: Understand the principles and applications of refrigeration systems.

CO5: Apply Thermodynamic concepts to determine performance parameters of refrigeration and airconditioning systems.

CO6: Understand the working principle of Air compressors and Steam nozzles, applications, relevance of air and identify methods for performance improvement.

FLUID MECHANICS (18ME43)

CO1: Identify and calculate the key fluid properties used in the analysis of fluid behavior.

CO2: Explain the principles of pressure, buoyancy and floatation.

CO3: Apply the knowledge of fluid statics, kinematics and dynamics while addressing problems of mechanical and chemical engineering.

CO4: Describe the principles of fluid kinematics and dynamics.

CO5: Explain the concept of boundary layer in fluid flow and apply dimensional analysis to form dimensionless numbers in terms of input output variables.

CO6: Illustrate and explain the basic concept of compressible flow and CFD.

KINEMATICS OF MACHINES (18ME44)

CO1: Knowledge of mechanisms and their motion.

CO2: Understand the inversions of four bar mechanisms.

CO3: Analyse the velocity, acceleration of links and joints of mechanisms.

CO4: Analysis of cam follower motion for the motion specifications.

CO5: Understand the working of the spur gears.

CO6: Analyse the gear trains speed ratio and torque.

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METAL CASTING AND WELDING (18ME45B)

CO1: Describe the casting process and prepare different types of cast products.

CO2: Acquire knowledge on Pattern, Core, Gating, Riser system and to use Jolt, Squeeze, Sand Slinger moulding machines.

CO3: Compare the Gas fired pit, Resistance, Coreless, Electrical and Cupola Metal Furnaces.

CO4: Compare the Gravity, Pressure die, Centrifugal, Squeeze, slush and Continuous Metal mould castings.

CO5: Understand the Solidification process and Casting of Non-Ferrous Metals.

CO6: Describe the Metal Arc, TIG, MIG, Submerged and Atomic Hydrogen Welding processes etc. used in manufacturing.

CO7: Describe methods for the quality assurance of components made of casting and joining process.

MECHANICAL MEASUREMENTS AND METROLOGY (18ME46B)

CO1: Understand the objectives of metrology, methods of measurement, standards of measurement & various measurement parameters.

CO2: Explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design.

CO3: Understand the working principle of different types of comparators.

CO3: Describe measurement of major & minor diameter, pitch, angle and effective diameter of screw threads.

CO4: Explain measurement systems, transducers, intermediate modifying devices and terminating devices.

CO5: Describe functioning of force, torque, pressure, strain and temperature measuring devices.

MECHANICAL MEASUREMENTS AND METROLOGY LAB (18MEL47B)

CO1: Understand Calibration of pressure gauge, thermocouple, LVDT, load cell, micrometre.

CO2: Apply concepts of Measurement of angle using Sine Centre/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/ Roller set.

CO3: Demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats.

CO4: Analyse tool forces using Lathe/Drill tool dynamometer.

CO5: Analyse Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth Vernier/Gear tooth micrometer.

CO6: Understand the concepts of measurement of surface roughness.

FOUNDRY, FORGING AND WELDING LAB (18MEL48B)

CO1: Demonstrate various skills in preparation of molding sand for conducting tensile, shear and compression tests using Universal sand testing machine.

CO2: Demonstrate skills in determining permeability, clay content and Grain Fineness Number of base sands.

CO3: Demonstrate skills in preparation of forging models involving upsetting, drawing and bending operations.

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DEPARTMENT OF MECHANICAL ENGINEERING

Consolidated CO's of all subject

Sem:-5th Academic Year 2020-2021

MANAGEMENT AND ECONOMICS (18ME51)

CO1: Understand needs, functions, roles, scope and evolution of Management.

CO2: Understand importance, purpose of Planning and hierarchy of planning and also54nalyse its types.

CO3: Discuss Decision making, Organizing, Staffing, Directing and Controlling.

CO4: Select the best economic model from various available alternatives.

CO5: Understand various interest rate methods and implement the suitable one.

CO6: Estimate various depreciation values of commodities.

CO7: Prepare the project reports effectively.

DESIGN OF MACHINE ELEMENTS- I (18ME52)

CO1: Apply the concepts of selection of materials for given mechanical components.

CO2: List the functions and uses of machine elements used in mechanical systems.

CO3: Apply codes and standards in the design of machine elements and select an element based on the Manufacturer's catalogue.

CO4: Analyse the performance and failure modes of mechanical components subjected to combined loading and fatigue loading using the concepts of theories of failure.

CO5: Demonstrate the application of engineering design tools to the design of machine components like shafts, couplings, power screws, fasteners, welded and riveted joints.

CO6: Understand the art of working in a team.

DYNAMICS OF MACHINES (18ME53)

CO1: Analyse the mechanisms for static and dynamic equilibrium.

CO2: Carry out the balancing of rotating and reciprocating masses.

CO3: Analyse different types of governors used in real life situation.

CO4: Analyse the gyroscopic effects on disks, airplanes, stability of ships, two and four wheelers.

CO5: Understand the free and forced vibration phenomenon.

CO6: Determine the natural frequency, force and motion transmitted in vibrating systems.

TURBO MACHINES(18ME54)

CO1: Model studies and thermodynamics analysis of turbomachines.

CO2: Analyse the energy transfer in Turbo machine with degree of reaction and utilisation factor.

CO3: Classify, analyse and understand various type of steam turbine.

CO4: Classify, analyse and understand various type of hydraulic turbine.

CO5: Understand the concept of radial power absorbing machine and the problems involved during its operation.

FLUID POWER ENGINEERING (18ME55)

CO1: Identify and analyse the functional requirements of a fluid power transmission system for a given application.

CO2: Visualize how a hydraulic/pneumatic circuit will work to accomplish the function.

CO3: Design an appropriate hydraulic or pneumatic circuit or combination circuit like electro-hydraulics, electro- pneumatics for a given application.

CO4: Select and size the different components of the circuit.

CO5: Develop a comprehensive circuit diagram by integrating the components selected for the given application.

OPERATIONS MANAGEMENT (18ME56)

CO1: Explain the concept and scope of operations management in a business context.

CO2: Recognize the role of Operations management among various business functions and its role in the organizations' strategic planning and gaining competitive advantage.

CO3: Analyze the appropriateness and applicability of a range of operations management systems/models in decision making.

CO4: Assess a range of strategies for improving the efficiency and effectiveness of organizational operations.

CO5: Evaluate a selection of frameworks used in the design and delivery of operations.

FLUID MECHANICS AND MACHINES LAB (18MEL57)

CO1: Perform experiments to determine the coefficient of discharge of flow measuring devices.

CO2: Conduct experiments on hydraulic turbines and pumps to draw characteristics.

CO3: Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations.

CO4: Determine the energy flow pattern through the hydraulic turbines and pumps.

CO5: Exhibit his competency towards preventive maintenance of hydraulic machines.

ENERGY CONVERSION LABORATORY (18MEL58)

CO1: Perform experiments to determine the properties of fuels and oils.

CO2: Conduct experiments on engines and draw characteristics.

CO3: Test basic performance parameters of I.C. Engine and implement the knowledge in industry.

CO4: Identify exhaust emission, factors affecting them and exhibit his competency towards preventive maintenance of IC engines.

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DEPARTMENT OF MECHANICAL ENGINEERING

Consolidated CO's of all subject

Sem:- 6th Academic Year 2020-2021

FINITE ELEMENT METHODS (18ME61)

CO1: Identify the application and characteristics of FEA elements such as bars, beams, plane and iso- parametric elements.

CO2: Develop element characteristic equation and generation of global equation.

CO3: Formulate and solve Axi-symmetric and heat transfer problems.

CO4: Apply suitable boundary conditions to a global equation for bars, trusses, beams, circular shafts, heat transfer, fluid flow, axi-symmetric and dynamic problems.

DESIGN OF MACHINE ELEMENTS II (18ME62)

CO1: Apply design principles for the design of mechanical systems involving springs, belts, pulleys, and wire ropes.

CO2: Design different types of gears and simple gear boxes for relevant applications.

CO3: Understand the design principles of brakes and clutches.

CO4: Apply design concepts of hydrodynamic bearings for different applications and select Anti friction bearings for different applications using the manufacturers, catalogue.

CO5: Apply engineering design tools to product design.

CO6: Become good design engineers through learning the art of working in a team.

HEAT TRANSFER (18ME63)

CO1: Understand the modes of heat transfer and apply the basic laws to formulate engineering systems.

CO2: Understand and apply the basic laws of heat transfer to extended surface, composite material and unsteady state heat transfer problems.

CO3: Analyze heat conduction through numerical methods and apply the fundamental principle to solve radiation heat transfer problems.

CO4: Analyze heat transfer due to free and forced convective heat transfer.

CO5: Understand the design and performance analysis of heat exchangers and their practical applications, Condensation and Boiling phenomena.

NON-TRADITIONAL MACHINING (18ME641)

CO1: Understand the compare traditional and non-traditional machining process and recognize the need for Non- traditional machining process.

CO2: Understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM, AJM and WJM.

CO3: Identify the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations.

CO4: Understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM.

CO5: Understand the LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanism of metal removal, applications, advantages and limitations LBM & EBM.

NON CONVENTIONAL ENERGY SOURCES (18ME651)

CO1: Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations.

CO2: Know the need of renewable energy resources, historical and latest developments.

CO3: Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation, drying, cooking etc.

CO4: Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications.

CO5: Understand the concept of Biomass energy resources and their classification, types of biogas Plants- applications.

CO6: Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations.

CO7: Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications

COMPUTER AIDED MODELLING AND ANALYSIS LAB (18MEL66)

CO1: Use the modern tools to formulate the problem, create geometry, descritize, apply boundary conditions to solve problems of bars, truss, beams, and plate to find stresses with different-loading conditions.

CO2: Demonstrate the ability to obtain deflection of beams subjected to point, uniformly distributed and varying loads and use the available results to draw shear force and bending moment diagrams.

CO3: Analyze and solve 1D and 2D heat transfer conduction and convection problems with different boundary conditions.

CO4: Carry out dynamic analysis and finding natural frequencies of beams, plates, and bars for various boundary conditions and also carry out dynamic analysis with forcing functions.

HEAT TRANSFER LAB (18MEL67)

CO1: Determine the thermal conductivity of a metal rod and overall heat transfer coefficient of composite slabs.

CO2: Determine convective heat transfer coefficient for free and forced convection and correlate with theoretical values.

CO3: Evaluate temperature distribution characteristics of steady and transient heat conduction through solid cylinder experimentally.

CO4: Determine surface emissivity of a test plate and Stefan Boltzmann constant.

CO5: Estimate performance of a refrigerator and effectiveness of a fin and Double pipe heat exchanger.

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DEPARTMENT OF MECHANICAL ENGINEERING

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Sem:- 7th Academic Year 2020-2021

CONTROL ENGINEERING (17ME71)

CO1: Identify the type of control and control actions.

CO2: Develop the mathematical model of the physical systems.

CO3: Estimate the response and error in response of first and second order systems subjected standard input signals.

CO4: Represent the complex physical system using block diagram and signal flow graph and obtain transfer function.

CO5: Analyse a linear feedback control system for stability using Hurwitz criterion, Routh's criterion and root Locus technique in complex domain.

CO6: Analyse the stability of linear feedback control systems in frequency domain using polar plots, Nyquist and Bode plots.

COMPUTER AIDED DESIGN AND MANUFACTURING (17ME72)

CO1: Define Automation, CIM, CAD, CAM and explain the differences between these concepts. Solve simple problems of transformations of entities on computer screen.

CO2: Explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines.

CO3: Analyse the automated flow linestoreduce time and enhance productivity.

CO4: Explain the use of different computer applications in manufacturing, and able to prepare part programs forsimple jobs on CNC machine tools and robot programming.

CO5: Visualize and appreciate the modern trends in Manufacturing like additive manufacturing, Industry 4.0 and applications of Internet of Things leading to Smart Manufacturing.

TOTAL QUALITY MANAGEMENT (17ME734)

CO1: Explain the various approaches of TQM.

CO2: Infer the customer perception of quality.

CO3: Analyse customer needs and perceptions to design feedback systems.

CO4: Apply statistical tools for continuous improvement of systems.

CO5: Apply the tools and technique for effective implementation of TQM.

MECHATRONICS (17ME744)

CO1: Illustrate various components of Mechatronics systems.

CO2: Assess various control systems used in automation.

CO3: Design and conduct experiments to evaluate the performance of a mechatronics system or component with respect to specifications, as well as to analyse and interpret data.

CO4: Apply the principles of Mechatronics design to product design.

CO5: Function effectively as members of multidisciplinary teams.

ENERGY AND ENVIRONMENT (17ME751)

CO1: Understand energy scenario, energy sources and their utilization.

CO2: Understand various methods of energy storage, energy management and economic analysis.

CO3: Analyse the awareness about environment and eco system.

CO4: Understand the environment pollution along with social issues and acts.

COMPUTRE AIDED MANUFACTURING LAB (17MEL76)

CO1: To expose the students to the techniques of CNC programming and cutting tool path generation through CNC simulation software by using G-Codes and M-codes.

CO2: To educate the students on the usage of CAM packages.

CO3: To make the students understand the importance of automation in industries through exposure to FMS, Robotics, and Hydraulics and Pneumatics.

DESIGN LAB (17MEL77)

CO1: Compute the natural frequency of the free and forced vibration of single degree freedom systems, critical speed of shafts.

CO2: Carry out balancing of rotating masses.

CO3: Analyse the governor characteristics.

CO4: Determine stresses in disk, beams, plates and hook using photo elastic bench.

CO5: Determination of Pressure distribution in Journal bearing.

CO6: Analyse the stress and strains using strain gauges in compression and bending test and stress distribution in curved beams.

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DEPARTMENT OF MECHANICAL ENGINEERING

Consolidated CO's of all subject

Sem:- 8th Academic Year 2020-2021

OPERATIONS RESEARCH (17ME81)

CO1: Understand the meaning, definitions, scope, need, phases and techniques of operations research.

CO2: Formulate as L.P.P and derive optimal solutions to linear programming problems by graphical method, Simplex method, Big-M method and Dual Simplex method.

CO3: Formulate as Transportation and Assignment problems and derive optimum solutions for transportation, Assignment and travelling salesman problems.

CO4: Solve problems on game theory for pure and mixed strategy under competitive environment.

CO5: Solve waiting line problems for M/M/1 and M/M/K queuing models.

CO6: Construct networkdiagrams and determine critical path, floats for deterministic and PERT networks including crashing of Networks.

CO7: Determine minimum processing times for sequencing of n jobs-2 machines, n jobs-3machines,n jobs-m machinesand 2 jobs-n machines using Johnson's algorithm.

ADDITIVE MANUFACTURING (17ME82)

CO1: Understand the different process of Additive Manufacturing. using Polymer, Powder and Nano materials manufacturing.

CO2: Analyse the different characterization techniques.

CO3: Describe the various NC, CNC machine programing and Automation techniques.

PRODUC LIFE CYCLE MANAGEMENT(17ME835)

CO1: Explain the various strategies of PLM and Product Data Management.

CO2: Describe decomposition of product design and model simulation.

CO3: Apply the concept of New Product Development and its structuring.

CO4: Analyze the technological forecasting and the tools in the innovation.

CO5: Apply the virtual product development and model analysis.

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HOD PRINCIPAL

CONTROL ENGINEERING

(18ME71)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Identify the type of control and control actions. Develop the mathematical model of the physical systems.	L2, L3
CO2	Estimate the response and error in response of first and second order systems subjected standard input signals.	L2, L3
CO3	Represent the complex physical system using block diagram and signal flow graph and obtain transfer function.	L2, L3
CO4	Analyse a linear feedback control system for stability using Hurwitz criterion, Routh"s criterion and root Locus technique in complex domain.	L2, L3
CO5	Analyse the stability of linear feedback control systems in frequency domain using polar plots, Nyquist and Bode plots.	L2, L3

COMPUTER AIDED DESIGN AND MANUFACTURING

(18ME72)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Define Automation, CIM, CAD, CAM and explain the differences between these concepts. Solve simple problems of transformations of entities on computer screen	L1 & L2
CO2	Explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines.	L1 & L2
CO3	Analyse the automated flow lines to reduce time and enhance productivity.	L1 & L2
CO4	Explain the use of different computer applications in manufacturing, and able to prepare part programs for simple jobs on CNC machine tools and robot programming.	L1 & L2
CO5	Visualize and appreciate the modern trends in Manufacturing like additive manufacturing, Industry 4.0 and applications of Internet of Things leading to Smart Manufacturing.	L1 & L2

TOTAL QUALITY MANAGEMENT

(18ME734)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Explain the various approaches of TQM	L1 & L2
CO2	Infer the customer perception of quality	L1 & L2
CO3	Analyse customer needs and perceptions to design feedback systems.	L1 & L2
CO4	Apply statistical tools for continuous improvement of systems	L1 & L2
CO5	Apply the tools and technique for effective implementation of TQM.	L1 & L2

MECHATRONICS

(18ME744)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Illustrate various components of Mechatronics systems.	L1 & L2
CO2	Assess various control systems used in automation.	L1 & L2
CO3	Design and conduct experiments to evaluate the performance of a mechatronics system or component with respect to specifications, as well as to analyse and interpret data.	L1 & L2
CO4	Apply the principles of Mechatronics design to product design.	L1 & L2
CO5	Function effectively as members of multidisciplinary teams.	L1 & L2

ENERGY AND ENVIRONMENT

(18ME751)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Understand energy scenario, energy sources and their utilization.	L2
CO2	Understand various methods of energy storage, energy management and economic analysis.	L2
CO3	Understand various scope and importance of environment and need for public awareness of an ecosystem.	L2
CO4	Analyze the awareness about environment and eco system.	L3
CO5	To introduce various acts related to prevention and control of pollution of water and air, forest protection act, wild life protection act etc.	L2

Faculty Signature **HOD Signature**

ENERGY ENGINEERING (18ME81)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	Understand the construction and working of steam generators and their accessories.	L1 & L2
CO2	Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems	L1 & L2
CO3	Understand principles of energy conversion from alternate sources including Geothermal Tidal and Wind Energy.	L1, L2 & L3
CO4	Understand the construction and working of hydroelectric plant and ocean thermal energy	L1, L2 & L3
CO5	Understand the basic concepts of Nuclear Energy-fusion and fission used in nuclear reactor	L1 & L2

AUTOMOBILE ENGINEERING (18ME824)

1. Course Outcomes

CO Number	Course Outcome **At the end of the course, student should be able to . . .**	Blooms' Level
CO1	To identify the different parts of an automobile and it's working	L1 & L2
CO2	To understand the working of transmission and braking systems	L1 & L2
CO3	To comprehend the working of steering and suspension systems	L1 & L2
CO4	To learn various types of fuels and injection systems	L1 & L2
CO5	To know the cause of automobile emissions, its effects on environment and methods to reduce the emissions.	L1 & L2

Faculty Signature **HOD Signature**