


Karnatak Law Society's
Vishwanathrao Deshpande Institute of Technology, Haliyal

(Approved by AICTE, New Delhi. Affiliated to VTU, Belagavi)
 Udyog Vidya Nagar, Haliyal – 581329, Dist: Uttara Kannada
 Phone: 08284-220861, 220334, 221409, Fax: 08284-220813
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Department of Mechanical Engineering (2017-21 Batch)

Subject Code	Subject Name	CO	CO Statements
17MAT31	Engineering Mathematics-III	CO1	To know the use of periodic signals and to calculate Fourier series of periodic as well as non-periodic functions.
		CO2	To find the infinite Fourier transform and Z-transform of various functions and its applications to solve difference equations.
		CO3	To employ appropriate numerical methods to solve algebraic and transcendental equations
		CO4	To calculate the values of unknowns by various numerical methods and solve the definite integrals by various numerical methods.
		CO5	To apply vector integral theorems to solve the integrals and to find the extremal of the functional
Subject Code	Subject Name	CO	
17ME32	Material Science	CO1	Will be able to classify the different crystal structure and relate the different properties of material by making use of stress strain diagram
		CO2	Will be able to illustrate Slip and Twinning, Fracture, Creep and Fatigue under different loading conditions
		CO3	Will be able to compare the different solidification mechanism and construct the different types of phase diagram
		CO4	Will be able to analyze the Iron Carbon diagram and compare the microstructure for various kinds heat treatment.
		CO5	Will be able to classify Ferrous Nonferrous and Composite materials.
Subject Code	Subject Name	CO	CO Statements
17ME33	BASIC THERMODYNAMICS	CO1	Explain thermodynamic systems, properties, Zeroth law of thermodynamics, temperature scales and energy interactions.
		CO2	Determine heat, work, internal energy, Enthalpy for flow and non flow process using First Second Law of Thermodynamics.




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		C03	Interpret behavior of pure substances and its applications to practical problems.
		C04	Determine change in internal energy, change in enthalpy and change in entropy using T-S relations for ideal gases.
		C05	Calculate thermodynamic properties of real gases at all range of pressure and temperatures using modified equation of state including Vander Waal's equation Redlich Wong equation and Beattie-Bridgeman equation.
Subject Code	Subject Name	CO	CO Statements
17ME34	MECHANICS OF MATERIALS	C01	Understand simple ,compound,thermal stresses and strains ,their relations Poisson's ratio Hooke's law ,mechanical properties
		C02	Formulation of stress intensity for bars,compound sections, beams with various constraints
		C03	Able to apply formulation to various structural members
		C04	Able to analyse different machine components using MSS and MNS theory and strain energy
		C05	
Subject Code	Subject Name	CO	CO Statements
17ME35A	METAL CASTING AND WELDING	C01	Student will be able to recognize the basic casting process and compare the different types of moulding techniques
		C02	Student will be able to identify different types of furnaces used in foundry
		C03	Student will be able to identify different types of welding processes.
		C04	Ability to recognize the Heat affected Zone(HAZ) and different welding defects.
		C05	Ability to inspect the soldering, Brazing and welding joints using appropriate inspection methods.
		C06	To provide adequate knowledge of quality test methods conducted on welded and casted components.
Subject Code	Subject Name	CO	CO Statements




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17ME35B	MACHINE TOOLS AND OPERATIONS	C01	Explain the construction and specification of various machine tools
		C02	Describe various machining processes pertaining to relative motions between tool and work piece
		C03	Explain the significance and functions of different tool materials, tool nomenclature, cutting fluids and surface finish
		C04	Apply mechanics of machining process to evaluate machining forces and machining time
		C05	Analyse tool wear mechanisms and equations to enhance tool life and minimize machining cost
Subject Code	Subject Name	CO	CO Statements
17ME36A	COMPUTER AIDED MACHINE DRAWING	C01	Improve visualization skill, understand theory of projection
		C02	Produce components , assembly drawing
		C03	Recognize modern engineering tools, software environment to create engineering drawing
		C04	Engage in lifelong learning using sketching and drawing as communication tool
Subject Code	Subject Name	CO	CO Statements
17ME36B	MECHANICAL MEASUREMENTS AND METROLOGY	C01	Understand the objectives of metrology, methods of measurement, selection of measuring instruments, standards of measurement and calibration of end bars.



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		C02	Explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design and different comparators with their functional requirement.
		C03	Describe the Terminology of screw threads, Measurements by 2-wire and 3-wire methods, Gear terminology, use of gear tooth Vernier Caliper.
		C04	Explain measurement systems, transducers, intermediate modifying devices and terminating devices.
		C05	Describe the Measurement of Force, Pressure Torque, Temperature and Strain measuring devices
Subject Code	Subject Name	CO	CO Statements
17MEL37A	MATERIALS TESTING LAB	C01	Acquire experimentation skills in the field of material testing
		C02	Develop theoretical understanding of the mechanical properties of materials by performing experiments
		C03	Apply the knowledge to analyze a material failure and determine the failure inducing agent/s
		C04	Apply the knowledge of testing methods in related areas
		C05	Know how to improve structure/behavior of materials for various industrial applications
Subject Code	Subject Name	CO	CO Statements
17MEL37B	MECHANICAL MEASUREMENTS AND METROLOGY LAB	C01	Understand Calibration of pressure gauge, thermocouple, LVDT, load cell, micrometre.
		C02	Apply concepts of Measurement of angle using Sine Centre/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/ Roller set.




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		C03	Demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats.
		C04	Analyse Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth Vernier/Gear tooth micrometre.
		C05	Understand the concepts of measurement of surface roughness.
Subject Code	Subject Name	CO	CO Statements
17MEL38A	FOUNDRY AND FORGING LAB	C01	Identify the different tools required for the foundry and forging process.
		C02	Ability to prepare the mould cavity for different shapes
		C03	Apply the knowledge of forging to prepare different forging models
		C04	Able to determine different properties of sand through proper sand testing methods
Subject Code	Subject Name	CO	CO Statements
17MEL38 B	MACHINE SHOP	C01	to provide an insight to different machine tools, accessories and attachments
		C02	to train students in to machining operations to enrich thier practice skills
		C03	to train the students team qualities and expose them to shoop floor activities
Subject Code	Subject Name	CO	CO Statements
<u>17MAT41</u>	Engineering Mathematics-IV	C01	To solve higher order differential equation by various numerical techniques




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		C02	To solve the ordinary and partial differential equation by using special functions.
		C03	To interpret the analyticity, calculate potential field residues and poles of complex potentials.
		C04	To calculate and analyze the probability distribution of the given statistical data
		C05	To analyze statistical inference based on the sampling distribution
Subject Code	Subject Name	CO	CO Statements
17ME42	<u>KINEMATICS OF MACHINES</u>	C01	Identify mechanisms with basic understanding of motion.
		C02	Comprehend motion analysis of planar mechanisms, gears, gear trains and cams. Carry out motion analysis of planar mechanisms, gears, gear trains and cams.
		C03	Carry out motion analysis of planar mechanisms, gears, gear trains and cams.
		C04	
Subject Code	Subject Name	CO	CO Statements
17ME43	<u>APPLIED THERMODYNAMICS</u>	C01	Understand the concept and principles of heat engines, heat pumps, refrigerators, air conditioners, reciprocating compressor and steam nozzles.
		C02	Understand the combustion phenomenon and exhaust gas analysis of fuels.
		C03	Apply the concept of thermodynamics for gas power cycles, jet propulsion, vapour power cycles, IC engines, refrigerators, air conditioner and compressors.
		C04	Analyze the performance of gas/vapour power cycles, refrigeration cycles, I.C.Engines, air conditioners, compressors and steam nozzles.




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Subject Code	Subject Name	CO	CO Statements
17ME44	FLUID MECHANICS	C01	Able to identify and define the fluid properties used in the analysis of fluid behavior,
		C02	Able to understand and apply the principles of pressure, buoyancy, flotation, laminar turbulence, and energy consideration in pipe flow
		C03	Able to apply the knowledge of fluid statics, kinematics and dynamics while addressing problems of mechanical engineering
		C04	Able to understand and apply the concept of boundary layer and dimensional analysis for input output variables, compressible flow and cfd.
17ME45A	Metal Casting and Welding	CO	
		C01	Ability to recognize the basic casting process and compare the different types of moulding techniques
		C02	Identify different types of furnaces used in foundry
		C03	Ability to identify different types of welding processes.
		C04	Recognize the Heat affected Zone(HAZ) and different welding defects.
		C05	Ability to inspect the soldering, Brazing and welding joints using appropriate inspection methods.
		-	
17ME45B	Machine Tools and Operations	CO	CO Statements
		C01	Explain the construction and specification of various machine tools
		C02	Describe various machining processes pertaining to relative motions between tool and work piece
		C03	Explain the significance and functions of different tool materials, tool nomenclature, cutting fluids and surface finish
		C04	Apply mechanics of machining process to evaluate machining forces and machining time



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		C05	Analyse tool wear mechanisms and equations to enhance tool life and minimize machining cost
17ME46A	COMPUTER AIDED MACHINE DRAWING	CO	CO Statements
		C01	Improve visualization skill, understand theory of projection
		C02	Produce components , assembly drawing
		C03	Recognize modern engineering tools, software environment to create engineering drawing
		C04	Engage in lifelong learning using sketching and drawing as communication tool
		-	
17ME46B	MECHANICAL MEASUREMENTS AND METROLOGY	CO	CO Statements
		C01	Understand the objectives of metrology, methods of measurement, selection of measuring instruments, standards of measurement and calibration of end bars.
		C02	Explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design and different comparators with their functional requirement.
		C03	Describe the Terminology of screw threads, Measurements by 2-wire and 3-wire methods, Gear terminology, use of gear tooth Vernier Caliper.
		C04	Explain measurement systems, transducers, intermediate modifying devices and terminating devices.
		C05	Describe the Measurement of Force, Pressure Torque, Temperature and Strain measuring devices
17MEL45B	Mechanical Measurements and Metrology Lab	CO	CO Statements
		C01	Understand Calibration of pressure gauge, thermocouple, LVDT, load cell, micrometre.
		C02	Apply concepts of Measurement of angle using Sine Centre/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/ Roller set.
		C03	Demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats.



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		C04	Analyse Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth Vernier/Gear tooth micrometre.
		C05	Understand the concepts of measurement of surface roughness.
17MEL47A	MATERIAL TESTING LAB	CO	CO Statements
		C01	Acquire experimentation skills in the field of material testing
		C02	Develop theoretical understanding of the mechanical properties of materials by performing experiments
		C03	Apply the knowledge to analyze a material failure and determine the failure inducing agent/s
		C04	Apply the knowledge of testing methods in related areas
		C05	Know how to improve structure/behavior of materials for various industrial applications
17MEL48A	FOUNDRY AND FORGING Lab	CO	CO Statements
		C01	Identify the different tools required for the foundry and forging process.
		C02	Ability to prepare the mould cavity for different shapes
		C03	Apply the knowledge of forging to prepare different forging models
		C04	Able to determine different properties of sand through proper sand testing methods
17MEL48B	Machine Shop LAB	CO	CO Statements
		C01	to provide an insight to different machine tools, accessories and attachments
		C02	to train students in to machining operations to enrich thier practice skills
		C03	to train the students team qualities and expose them to shoop floor activities



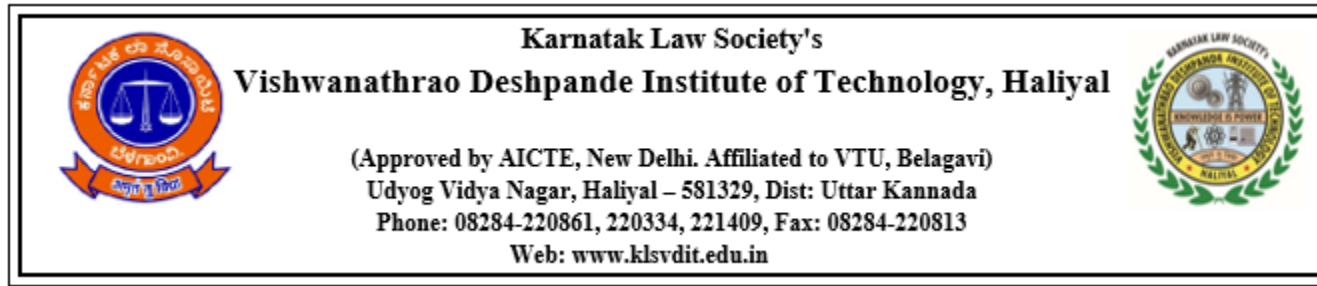
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	Subject Name	CO	CO Statements
17ME51	Management And Engineering Economics	C01	Understand needs, functions, roles, scope and evolution of Management
		C02	Understand importance, purpose of Planning and hierarchy of planning and also analyze
		C03	Discuss Decision making, Organizing, Staffing, Directing and Controlling
		C04	Select the best economic model from various available alternatives
		C05	Understand various interest rate methods and implement the suitable one.
		C06	Estimate various depreciation values of commodities
Subject Code	Subject Name	CO	CO Statements
17ME52	Dynamics Of Machines	C01	Determine the forces and couples for static and dynamic conditions of four bar and slider crank mechanisms to keep the system in equilibrium. and Determine magnitude and angular position of balancing masses under static and dynamic condition of rotating masses in same and different planes.
		C02	Determine unbalanced primary, secondary forces and couples in single and multi-cylinder engine.
		C03	Determine sensitiveness, isochronism, effort and power of porter and hartnell governors and Determine gyroscopic couple and effects related to 2, 4 wheeler, plane disc, ship and aeroplanes.
		C04	Understand types of vibration, SHM and methods of finding natural frequencies of simple mechanical systems & Determine equation of motion, natural frequency, damping factor, logarithmic decrement of damped free vibration (SDOF) systems.
		C05	Determine the natural frequency, force and motion transmissibility of single degree freedom systems.
		C06	Determine equation of motion of rotating and reciprocating unbalance systems, magnification factor, and transmissibility of forced vibration (SDOF) systems.



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Subject Code	Subject Name	CO	CO Statements
17ME53	Turbomachines	CO1	Concept of turbomachines and comparison with Positive displacement machine, Model analysis.
		CO2	Analyze the performance characteristics of turbomachines through dimensional analyses by applying geometric ,flow and fluid properties..
		CO3	Explain the various components of energy transfer in turbo machines and velocity triangles.
		CO4	Analyze the performance characteristics of Steam turbine and Hydraulic turbine.
		CO5	Analyze the performance characteristics of Pump ,Blower and Compressor.
Subject Code	Subject Name	CO	CO Statements
17ME54	Design Of Machine Elements - I	CO1	Apply the concepts of selection of materials for given mechanical components. List the functions and uses of machine elements used in mechanical systems,Apply codes and standards in the design of machine elements
		CO2	Analyse the performance and failure modes of mechanical components subjected to combined loading and fatigue loading using the concepts of theories of failure
		CO3	Demonstrate the application of engineering design tools to the design of machine components like shafts, keys and couplings.
		CO4	Demonstrate the application of engineering design tools to the design of machine components like welded and riveted joint
		CO5	Demonstrate the application of engineering design tools to the design of machine components like temporary joints:Threaded fasteners and Power Screws
Subject Code	Subject Name	CO	CO Statements
17ME554	Non Traditional Machining	CO1	Understand and 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



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			parameters, process characteristics, applications, advantages and limitations
		CO4	Understand the constructional features 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
Subject Code	Subject Name	CO	CO Statements
17ME564	Project Management	CO1	To define a project, types, characteristics, measures, identify project roles, strategic planning and portfolio Management, select and prioritize projects with scoring models
		CO2	To enumerate, describe, and prioritize, set scope for a project. Integrating Coding the Work Breakdown Structure (WBS). Identify ways for project Scheduling, methods, potential problems, and Gantt chart
		CO3	Create a Human Resources Management Plan, define project cost terms, estimating project Cost, cost control. Plan for risk management, Prioritize, project quality, tools, project management plan, kick-off the project, baseline, and plan.
		CO4	To identify the role of supply chain management, plan, conduct, control, partnering and collaborations. Create project progress report. Describe process for terminating a project, Secure customer feedback and acceptance, create transition plan, sharing lessons learned.
		CO5	Understand the basic rules of network construction, Analyze Activity on Node (AON) and Activity on Arrow (AOA), Solve Program (Project) Management and Review Technique (PERT) and Critical Path Method
Subject Code	Subject Name	CO	CO Statements
17ME562	Energy and Environment	CO1	understand energy scenario,energy sources and their utilization
		CO2	learn about methods of energy storage, energy management and economic analysis
		CO3	to have proper awareness about environment and eco system
		CO4	understand the environment pollutionalong with social issues and acts




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Subject Code	Subject Name	CO	CO Statements
17MEL57	Fluid Mechanics & Machinery Lab	CO1	Able to understand, analysis and conclude the experiments of flow measuring devices like V-notch, orifice meter and venturimeter.
		CO2	Able to measure the minor and major losses, also analysis and conclude the experiments.
		CO3	Able to understand, analysis the operating characteristics of pumps
		CO4	Able to understand, analysis the operating characteristics of Turbines
Subject Code	Subject Name	CO	CO Statements
17MEL58	Energy Lab	CO1	Perform experiments to determine the properties of fuels and oils.
		CO2	Test basic performance parameters of I.C. Engine and implement the knowledge in industry.
		CO3	Identify exhaust emission, factors affecting them and report the remedies.
		CO4	Demonstration of valve/port timing diagram and assembly of IC engines
Subject Code	Subject Name	CO	CO Statements
17ME61	Finite Element Analysis	CO1	Understand the concepts behind formulation methods in FEM
		CO2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements
		CO3	Develop element characteristic equation and generation of global equation
		CO4	Able to apply suitable boundary condition to global equation for bars, trusses, beams, circular shafts, heat transfer, fluid flow, axisymmetric and dynamic problems and solve them displacements, stress and strains
Subject Code	Subject Name	CO	CO Statements



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17ME62	Computer Integrated Manufacturing	C01	Able to define Automation, CIM, CAD, CAM and explain the differences between these concepts. Solve simple problems of transformations of entities on computer screen.
		C02	Explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines.
		C03	Analyze the automated flow lines to reduce down time and enhance productivity.
		C04	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.
		C05	Visualize and appreciate the modern trends in Manufacturing like additive manufacturing, Industry 4.0 and applications of Internet of Things leading to Smart Manufacturing.
Subject Code	Subject Name	CO	CO Statements
17ME63	Heat Transfer	C01	Understand the basic modes of heat transfer and laws governing.
		C02	Compute temperature distribution in steady and unsteady state heat conduction by using thermal resistance concepts and numerical methods.
		C03	Understand and interpret heat transfer through extended surfaces
		C04	Interpret and compute forced, free convection by using correlations and radiation heat transfer
		C05	Design and analyse heat exchanges using LMTD and NTU methods
Subject Code	Subject Name	CO	
17ME64	Design of Machine Elements-II	C01	To understand various types of springs used in mechanical systems and design different types of springs helical coil springs of circular and non-circular cross sections. Tension and compression springs, concentric springs; springs under fluctuating loads. Leaf Springs etc.
		C02	To select and design transmission elements like belts, pulleys, wire ropes etc.
		C03	To select and design gear drives like spur gear, helical gear, bevel gear and worm gear.
		C04	To understand and design different types of clutches and brakes used in mechanical and automobile systems.




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		C05	To understand the concept of lubrication and different types of lubrication. Design of different types of bearings
Subject Code	Subject Name	CO	CO Statements
17ME655	Automobile Engineering	C01	Identify the different parts of an automobile and it's working.
		C02	Understand the working of transmission and braking systems.
		C03	Understand the working of steering and suspension systems and their applications.
		C04	Selection and applications of various types of fuels and injection systems.
		C05	Analyse the cause of automobile emissions, its effects on environment and methods to reduce the emissions.
Subject Code	Subject Name	CO	CO Statements
17ME664	Total Quality Management	C01	Explain the various approaches of TQM
		C02	Infer the customer perception of quality
		C03	Analyze customer needs and perceptions to design feedback systems.
		C04	Apply statistical tools for continuous improvement of systems
		C05	Apply the tools and technique for effective implementation of TQM.
Subject Code	Subject Name	CO	CO Statements
17MEL67	Heat Transfer Lab	C01	Apply one dimensional steady and unsteady state conduction heat transfer through cylinder, composite slab and cylindrical pin fin.
		C02	Evaluate the Stefan Boltzmann constant and Emissivity for thermal radiation.
		C03	Compute average heat transfer coefficient for free ,forced convection, film wise and drop wise condensation
		C04	Analyse the performance of heat exchanger, vapour compression refrigeration and Air-conditioning system.



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Subject Code	Subject Name	CO	CO Statements
17MEL68	Modeling and Analysis Lab(FEA)	CO1	Did you acquire basic understanding of Modeling and Analysis software
		CO2	Understanding the different kinds of analysis and application of basic principles to find out the stress and other related parameters of bars, beams loaded with loading conditions.
		CO3	Understanding the thermal analysis of 1D and 2D problems with conduction and convection boundary conditions
		CO4	Applying the basic principles to carry out dynamic analysis to know the natural frequency of different kind of beams.

Subject Code	Subject Name	CO	CO Statements
17ME71	Energy Engineering	CO1	Understand energy scenario, energy sources and their utilization
		CO2	understand and apply energy conversion methods and their analysis
		CO3	understand and apply principles of renewable energy conversion systems
		CO4	understand the concept of green energy and zero energy
Subject Code	Subject Name	CO	CO Statements
17ME72	Fluid Power System	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 and Develop 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, develop a comprehensive circuit diagram for given Application.




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Department of Mechanical Engineering (2017-21 Batch)

Subject Code	Subject Name	CO	CO Statements
17ME73	Control Engineering	C01	Recognize control system and its types , control actions.
		C02	Determine the system governing equations for physical models(Electrical, Thermal,Mechanical, Electro Mechanical)
		C03	Calculate the gain of the system using block diagram and signal flow graph
		C04	Illustrate the response of 1st and 2nd order systems
		C05	Determine the stability of transfer functions in complex domain and frequency domain
		C06	Employ state equations to study the controllability and observability
Subject Code	Subject Name	CO	CO Statements
17ME742	Tribology	C01	Understand the fundamentals of tribology and associated parameters.
		C02	Apply concepts of tribology for the performance analysis and design of components experiencing relative motion.
		C03	Analyse the requirements and design hydrodynamic journal and plane slider bearings for a given application.
		C04	Select proper bearing materials and lubricants for a given tribological application.
		C05	Apply the principles of surface engineering for different applications of tribology.
Subject Code	Subject Name	CO	CO Statements
17ME753	Mechatronics	C01	Illustrate various components of Mechatronics systems.
		C02	Assess various control systems used in automation.
		C03	Develop mechanical, hydraulic, pneumatic and electrical control systems.
Subject Code	Subject Name	CO	CO Statements
17MEL76	Design Lab	C01	To understand the natural frequency, logarithmic decrement, damping ratio and damping.




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		C02	To understand the balancing of rotating masses and critical speed of a rotating shaft
		C03	To understand the concept of stress concentration using photo elasticity and principles of pressure development in an oil film of a hydrodynamic journal bearing.
		C04	To understand the equilibrium speed, sensitiveness, power and effort of governor.
Subject Code	Subject Name	CO	CO Statements
17MEL77	CIM Lab	C01	Able to recognize & handle design problem in systematic manner
		C02	To gain practical experience in 2D drafting and 3D modelling using software
		C03	Able to apply CIM in real life applications
		C04	To recognize the concepts of G and M codes for part programming
		C05	To expose students to advanced control systems like Fanuc etc
		C06	To know the various applications of CNC machine and exposure to CNC machine
Subject Code	Subject Name	CO	CO Statements
17MEP78	Project Phase – I	C01	Ability to consolidate the literature search to identify and formulate engineering problem.
		C02	Ability to identify the community that shall benefit through the solution to the identified engineering problem and also demonstrate concern for environment.
		C03	Ability to engage in groups to identify the mathematical, engineering, management principles necessary to solve the identified engineering problem.
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17ME81	Operations Research	CO1	Understand the meaning, definitions, scope, need, phases and techniques of operations research. 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.
		CO2	Formulation of Transportation and Assignment problems and derive optimum solutions for transportation, Assignment and travelling salesman problems
		CO3	Formulation and solve problems on game theory for pure and mixed strategy under competitive environment, waiting line problems for M/M/1 and M/M/K queuing models.
		CO4	Construct network diagrams and determine critical path, determine minimum processing times for sequencing of n jobs-2 machines, n jobs-3machines, n jobs-m machinesand2 jobs-n machines using Johnson's algorithm.
Subject Code	Subject Name	CO	CO Statements
17ME82	Additive Manufacturing	CO1	Understand the different process of Additive Manufacturing. using Polymer, Powder and Nano materials manufacturing
		CO2	Analyze the different characterization techniques
		CO3	Describe the various NC, CNC machine programing and Automation techniques
Subject Code	Subject Name	CO	CO Statements
17ME835	Product life cycle management	CO1	Understand the various strategies of PLM and PDM
		CO2	Understand decomposition of product design and model simulation
		CO3	Apply the concept of new product development and its structuring
		CO4	Analyze technological forecasting and tools in used Industry
			Apply virtual product development and model analysis
Subject Code	Subject Name	CO	CO Statements



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17ME84	Internship / Professional Practice	CO1	Able to acquire knowledge pertaining to best practices in the industry and correlate with the courses learnt
		CO2	Able to identify industrial activities and to some extent related problems
		CO3	Able to communicate with people, coordinate for performing the task and build rapport with the people maintaining ethics
		CO4	Able to comprehend and present the report
Subject Code	Subject Name	CO	CO Statements
17ME85	Project Phase – II	CO1	Ability to apply the identified concepts and modern engineering tools to arrive at design solutions for the identified engineering problems.
		CO2	Ability to demonstrate compliance to the prescribed standards / safety norms through implementation for the identified engineering problem.
		CO3	Ability to engage in effective oral communication through presentation of the project work.
Subject Code	Subject Name	CO	CO Statements
17MES86	Seminar	CO1	Prepare comprehensive report based on literature survey related to recent engineering development
		CO2	Comprehend the engineering activities with effective presentation
		CO3	Able to summarize, technical societal information through various resources
		CO4	Justify the presentation content individually to a group