Department of Mechanical Engineering

	Course Outcome Statement		
Course:	**Code: 18MAT31** **Course Name: TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES**	**Faculty: Prof. Mahesh K S**	**Academic Year: 2019 – 20**
	Statement		
Course 301.1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.		
Course 301.2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.		
Course 301.3	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.		
Course 301.4	Determine the externals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.		

	Course Outcome Statement		
Course:	**Code:18ME32** **Course Name: Mechanics of Materials**	**Faculty:Mithun C M**	**Academic Year: 2019 – 20**
	Statement		
Course 302.1	Understand simple, compound, thermal stresses and strains their relations and strain energy.		
Course 302.2	Analyse structural members for stresses, strains and deformations.		
Course 302.3	Analyse the structural members subjected to bending and shear loads.		
Course 302.4	Analyse shafts subjected to twisting loads.		
Course 302.5	Analyse the short columns for stability.		

	Course Outcome Statement		
Course:	**Code:18ME33** **Course Name: Basic Thermodynamics**	**Faculty: Abhishek Dewangan**	**Academic Year: 2019 – 20**
	Statement		
Course 303.1	Explain fundamentals of thermodynamics and evaluate energy interactions across the boundary of thermodynamic systems.		
Course 303.2	Evaluate the feasibility of cyclic and non-cyclic processes using 2nd law of thermodynamics.		
Course 303.3	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.		
Course 303.4	Interpret the behavior of pure substances and its application in practical problems, Recognize differences between ideal and real gases and evaluate thermodynamic properties of ideal and real gas mixtures using various relations		
Course 303.5	Evaluate thermodynamic properties of ideal and real gas mixtures using various relations		

	Course Outcome Statement		
Course:	**Code:18ME34** **Course Name: Material Science**	**Faculty:Rizwan Jaffar**	**Academic Year: 2019 – 20**
	Statement		
Course 304.1	The foundation for understanding the structure and behavior of materials common in mechanical engineering.		
Course 304.2	Topics to explore the mechanical properties of metals and their alloys, polymers, ceramics, smart materials and composites.		
Course 304.3	To understand modifications of material properties by heat treatment processes.		
Course 304.4	Selections of different materials for various applications are highlighted.		
Course 304.5	Impart knowledge of various failure modes of materials.		

	Course Outcome Statement		
Course:	**Code: 18ME35B/45B** **Course Name:Metal Casting & Welding**	**Faculty: Dr. Suyog**	**Academic Year: 2019 – 20**
	Statement		
Course 305.1	To provide detailed information about the moulding processes.		
Course 305.2	To provide knowledge of various casting process in manufacturing.		
Course 305.3	To impart knowledge of various joining process used in manufacturing.		
Course 305.4	To provide adequate knowledge of quality test methods conducted on welded and casted Components		
Course 305.5	To provide knowledge on design and analysis of casting manually		

	Course Outcome Statement		
Course:	**Code:18ME36A/46A** **Course Name:Computer Aided Machine Drawing.**	**Faculty:Balakrishna G**	**Academic Year: 2019 – 20**
	Statement		
Course 306.1	Identify the national and international standards pertaining to machine drawing.		
Course 306.2	Understand the importance of the linking functional and visualization aspects in the preparation of the part drawings		
Course 306.3	Apply limits and tolerances to assemblies and choose appropriate fits for given assemblies.		
Course 306.4	Interpret the Machining and surface finish symbols on the component drawings.		
Course 306.5	Preparation of the part or assembly drawings as per the conventions.		

	Course Outcome Statement		
Course:	**Code:18MEL37A/47A** **Course Name:Material Testing LAB**	**Faculty: Mohd Rizwan Jafar**	**Academic Year: 2019 – 20**
	Statement		
Course 307.1	To learn the concept of the preparation of samples to perform characterization such as microstructure, volume fraction of phases and grain size.		
Course 307.2	To understand mechanical behaviour of various engineering materials by conducting standard tests.		
Course 307.3	To learn material failure modes and the different loads causing failure.		
Course 307.4	To learn the concepts of improving the mechanical properties of materials by different methods like heat treatment, surface treatment etc.		

	Course Outcome Statement		

Course:	Code:18MEL38B/48B Course Name: Foundry, Forging & Welding LAB.	Faculty:CHETAN C S & ANJAN KUMAR	Academic Year: 2019 – 20
		Statement	
Course 308.1	Demonstrate various skills in preparation of molding sand for conducting tensile, shear and compression tests using Universal sand testing machine.		
Course 308.2	Demonstrate skills in determining permeability, clay content.		
Course 308.3	Demonstrate skills in determining Grain Fineness Number of base sands.		
Course 308.4	Demonstrate skills in preparation of forging models involving upsetting.		
Course 308.5	Demonstrate skills in preparation of forging models involving drawing and bending operations		

	Course Outcome Statement		
Course:	Code: 18MAT41 Course Name: COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS	Faculty: Prof. Mahesh K S	Academic Year: 2019 – 20
		Statement	
Course 401.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.		
Course 401.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.		
Course 401.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.		
Course 401.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data		
Course 401.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis		

	Course Outcome Statement		
Course:	Code:18ME42 Course Name: Applied Thermodynamics	Faculty: Vijayakumar S. Totad	Academic Year: 2019 – 20
		Statement	
Course 402.1	Apply thermodynamic concepts to analyze the performance of gas power cycles		
Course 402.2	Apply thermodynamic concepts to analyze the performance of vapour power cycles.		
Course 402.3	Understand combustion of fuels and performance of I C engines.		
Course 402.4	Understand the principles and applications of refrigeration systems.Apply Thermodynamic concepts to determine performance parameters of refrigeration and airconditioning systems.		
Course 402.5	Understand the working principle of Air compressors and Steam nozzles, applications, relevance of air and identify methods for performance improvement.		

	Course Outcome Statement		
Course:	Code:18ME43 Course Name:Fluid Mechanics	Faculty: Abhishek Dewangan	Academic Year: 2019 – 20
		Statement	
Course 403.1	Identify and calculate the key fluid properties used in the analysis of fluid behaviour.		
Course 403.2	Explain the principles of pressure, buoyancy and floatation, Describe the principles of fluid kinematics and dynamics		
Course 403.3	Apply the knowledge of fluid statics, kinematics and dynamics while addressing problems of mechanical and chemical engineering		
Course 403.4	Explain the concept of boundary layer in fluid flow and apply dimensional analysis to form dimensionless numbers in terms of input output variables		
Course 403.5	Illustrate and explain the basic concept of compressible flow and CFD.		

	Course Outcome Statement		
Course:	Code:18ME44 Course Name: Kinematics Of Machines	Faculty:Dr Prashanth Ramchandran	Academic Year: 2019 – 20
		Statements	
Course 404.1	Knowledge of Mechanisms and their Motion. Understand the Inversions of Four Bar Mechanisms.		
Course 404.2	Analyse the Velocity and Acceleration of Links and Joints of Mechanisms (Using Graphical Method).		
Course 404.3	Analyse the Velocity and Acceleration of Links and Joints of Mechanisms (Using Analytical Method).		
Course 404.4	Analysis of Cam Follower Motion for various Motion Specifications.		
Course 404.5	Understand the Working of Spur Gears. Analyze the Gear Trains' Speed Ratio and Torque.		

	Course Outcome Statement		
Course:	Code:18ME35A/45A Course Name:Metal Cutting & Forming	Faculty: Rizwan Jaffar	Academic Year: 2019 – 20
		Statement	
Course 405.1	Explain the construction & specification of various machine tools.		
Course 405.2	Discuss different cutting tool materials, tool nomenclature & surface finish.		
Course 405.3	Apply mechanics of machining process to evaluate machining time.		
Course 405.4	Analyze tool wear mechanisms and equations to enhance tool life and minimize machining cost.		
Course 405.5	Understand the concepts of different metal forming processes.		
Course 405.6	Apply the concepts of design of sheet metal dies to design different dies for simple sheet metal components		

	Course Outcome Statement		
Course:	Code:18ME36B/46B Course Name: Mechanical Measurements & Metrology	Faculty: Mithun C M	Academic Year: 2019 – 20
		Statement	
Course 406.1	Understand the objectives of metrology, methods of measurement, standards of measurement & various measurement parameters.		
Course 406.2	Explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design, Understand the working principle of different types of comparators		
Course 406.3	Describe measurement of major & minor diameter, pitch, angle and effective diameter of screw threads.		
Course 406.4	Explain measurement systems, transducers, intermediate modifying devices and terminating devices		
Course 406.5	Describe functioning of force, torque, pressure, strain and temperature measuring devices.		

	Course Outcome Statement		
Course:	Code:18MEL37B/47B Course Name: Mechanical Measurements & Metrology Lab	Faculty:Anjan Kumar & Geetha Chavan	Academic Year: 2019 – 20
		Statement	
Course 407.1	To illustrate the theoretical concepts taught in Mechanical Measurements & Metrology through experiments.		

Course 407.2	To illustrate the use of various measuring tools & measuring techniques
Course 407.3	To understand calibration techniques of various measuring devices.

Course Outcome Statement			
Course:	Code:18MEL38A/48A Course Name:Workshop & Machine Shop Practice	Faculty:Chetan C S & Puneeth H M	Academic Year: 2019 − 20
	Statement		
Course 408.1	To read working drawings, understand operational symbols and execute machining operations		
Course 408.2	Prepare fitting models according to drawings using hand tools- V-block, marking gauge, files, hack saw, drills etc		
Course 408.3	Understand integral parts of lathe, shaping and milling machines and various accessories and attachments used		
Course 408.4	Select cutting parameters like cutting speed, feed, depth of cut, and tooling for various machining operations		
Course 408.5	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.Perform machining operations such as plain shaping, inclined shaping, keyway cutting, Indexing and Gear cutting and estimate cutting time.		

Course Outcome Statement			
Course:	Code:17ME51 Course Name: Management & Engineering Economics	Faculty: Dr Perini Praveenasri	Academic Year: 2019 − 20
	Statement		
Course 501.1	Explain the development of management and the role it plays at different levels in an organization.		
Course 501.2	Comprehend the process and role of effective planning, organizing and staffing for the development of an organization.		
Course 501.3	Understand the necessity of good leadership, communication and coordination for establishing effective control in an organization.		
Course 501.4	Understand engineering economics demand supply and its importance in economics decision making and problem solving.		
Course 501.5	Calculate present worth, annual worth and IRR for different alternatives in economic decision making.		

Course Outcome Statement			
Course:	Code:17ME52 Course Name: Dyanmics of Machinery	Faculty:Dr. Prashanth Ramachandran	Academic Year: 2019 − 20
	Statements		
Course 502.1	Determine the Forces and Couples for Static and Dynamic Conditions of Four Bar and Slider Crank Mechanisms to keep the System in Equilibrium.		
Course 502.2	Determine Magnitude and Angular Position of Balancing Masses under Static and Dynamic Condition of Rotating Masses in Same and Different planes. Determine Unbalanced Primary, Secondary Forces and Couples in Single and Multi-Cylinder Engine		
Course 502.3	Determine Sensitiveness, Isochronism, Effort and Power of Porter and Hartnell Governors. Determine Gyroscopic Couple and effects related to 2, 4 Wheeler, Plane Disc, Ship and Aeroplanes.		
Course 502.4	Understand Types of Vibration, SHM and methods of finding Natural Frequencies of simple mechanical systems. Determine the Natural Frequency, Force and Motion Transmissibility of Single Degree of Freedom Systems.		
Course 502.5	Determine Equation of Motion, Natural Frequency, Damping Factor, Logarithmic Decrement of Damped Free Vibration (SDOF) Systems. Determine Equation of Motion of Rotating and Reciprocating Unbalanced Systems, Magnification Factor, and Transmissibility of Forced Vibration (SDOF) Systems.		

Course Outcome Statement			
Course:	Code:17ME53 Course Name:Turbo Machines.	Faculty:Abhishek Dewangan	Academic Year: 2019 − 20
	Statement		
Course 503.1	Able to give precise definition of turbo machinery, Identify various types of turbo machinery		
Course 503.2	Apply the Euler's equation for turbo machinery to analyse energy transfer in turbo machines		
Course 503.3	Understand the principle of operation of pumps, fans, compressors and turbines.		
Course 503.4	Perform the preliminary design of turbo machines (pumps, rotary compressors and turbines)		
Course 503.5	Analyze the performance of turbo machinery		

Course Outcome Statement			
Course:	Code:17ME54 Course Name: Design of Machine Elements I	Faculty:Chetan C S	Academic Year: 2019 − 20
	Statement		
Course 504.1	Describe the design process, choose materials.Apply the codes and standards in design process.		
Course 504.2	Analyze the behavior of machine components under static, impact, fatigue loading using failure theories.		
Course 504.3	Design shafts, joints, couplings.		
Course 504.4	Design of riveted and welded joints.		
Course 504.5	Design of threaded fasteners and power screws.		

Course Outcome Statement			
Course:	Code:17ME554 Course Name: Non Traditional Machining.	Faculty:Praveen kumar BC	Academic Year: 2019 − 20
	Statement		
Course 505.1	Understand the compare traditional and non-traditional machining processand recognize the need for Non-traditional machining process.		
Course 505.2	Understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM, AJM and WJM.		
Course 505.3	Identify the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations.		
Course 505.4	Understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM.		
Course 505.5	Understand the LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanism of metal removal, applications, advantages and limitations LBM & EBM.		

Course Outcome Statement			
Course:	Code:17ME563 Course Name: Automation & Robotics	Faculty:Srinivas Chari V	Academic Year: 2019 − 20
	Statement		
Course 506.1	To identify potential areas for automation and justify need for automation.		
Course 506.2	To select suitable major control components required to automate a process or an activity.		
Course 506.3	To study the various parts of robots and fields of robotics.		

Course 506.4	To study the various kinematics and inverse kinematics of robots.
Course 506.5	To study the control of robots for some specific applications.

Course Outcome Statement			
Course:	**Code:17ME564** **Course Name: Project Management**	**Faculty: Amar Bhaskar & Peter**	**Academic Year: 2019 − 20**
	Statement		
Course 507.1	Understand the selection, prioritization and initiation of individual projects and strategic role of project management.		
Course 507.2	Understand the work breakdown structure by integrating it with organization.		
Course 507.3	Understand the scheduling and uncertainty in projects.		
Course 507.4	Students will be able to understand risk management planning using project quality tools.		
Course 507.5	Understand the activities like purchasing, acquisitions, contracting, partnering and collaborations related to performing projects.		
Course 507.6	Determine project progress and results through balanced scorecard approach		
Course 507.7	Draw the network diagram to calculate the duration of the project and reduce it using crashing.		

Course Outcome Statement			
Course:	**Code:17MEL57** **Course Name: Fluid Mechanics & Machinery Lab**	**Faculty: Vijayakumar S.Totad**	**Academic Year: 2019 − 20**
	Statement		
Course 508.1	Perform experiments to determine the coefficient of discharge of flow measuring devices.		
Course 508.2	Conduct experiments on hydraulic turbines and pumps to draw characteristics.		
Course 508.3	Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations.		
Course 508.4	Determine the energy flow pattern through the hydraulic turbines and pumps.		
Course 508.5	Exhibit his competency towards preventive maintenance of hydraulic machines.		

Course Outcome Statement			
Course:	**Code:17MEL58** **Course Name: Energy LAB**	**Faculty: Abhishek Dewangan**	**Academic Year: 2019 − 20**
	Statement		
Course 509.1	Perform experiments to determine the properties of fuels and oils.		
Course 509.2	Conduct experiments on engines and draw characteristics.		
Course 509.3	Test basic performance parameters of I.C. Engine and implement the knowledge in industry.		
Course 509.4	Identify exhaust emission, factors affecting them and report the remedies.		
Course 509.5	Determine the energy flow pattern through the I C Engine and Exhibit his competency towards preventive maintenance of IC engines.		

Course Outcome Statement			
Course:	**Code:17ME61** **Course Name: Finite Element Analysis**	**Faculty:Mithun C M**	**Academic Year: 2019 − 20**
	Statement		
Course 601.1	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements.		
Course 601.2	Develop element characteristic equation and generation of global equation.		
Course 601.3	Apply suitable boundary conditions to a global equation for beams, circular shafts		
Course 601.4	Formulate and solve heat transfer problems.		
Course 601.5	Apply suitable boundary conditions to a global equation for axi-symmetric problems and dynamic problems		

Course Outcome Statement			
Course:	**Code:17ME62** **Course Name: Computer Integrated Manufacuring.**	**Faculty:Srinivas Chari V**	**Academic Year: 2019 − 20**
	Statement		
Course 602.1	To impart knowledge of CIM andAutomation and different concepts of automation by developing mathematical models.		
Course 602.2	To make students to understand the Computer Applications in Design and Manufacturing [CAD / CAM] leading to Computer integrated systems. Enable them to perform various transformations of entities on display devices.		
Course 602.3	To expose students to automated flow lines,assemblylines,Line Balancing Techniques,and Flexible Manufacturing Systems.		
Course 602.4	To expose students to computer aided process planning, material requirement planning, capacity planning etc.		
Course 602.5	To expose the students to CNC Machine Tools,CNC part programming, and industrial robots, To introduce the students to concepts of Additive Manufacturing, Internet of Things, and Industry 4.0leading to Smart Factory.		

Course Outcome Statement			
Course:	**Code:17ME63** **Course Name: Heat Transfer**	**Faculty:Geetha Chavan**	**Academic Year: 2019 − 20**
	Statement		
Course 603.1	understand the basic mode of heat transfer.		
Course 603.2	compute temperature distribution in steady state and Unsteady state heat Conduction		
Course 603.3	Understand and interpret heat transfer through extended surfaces		
Course 603.4	Interpret and computer forced and free convective heat transfer		
Course 603.5	Explain the principles of Radiation heat transfer and understand the numerical formula for heat Conduction problem		

Course Outcome Statement			
Course:	**Code:17ME64** **Course Name: Design of Machine Elements II**	**Faculty:Chetan C S**	**Academic Year: 2019 − 20**
	Statement		
Course 604.1	To understand various elements involved in a mechanical system.		
Course 604.2	To analyze various forces acting on the elements of a mechanical system and design them using appropriate techniques, codes, and standards.		
Course 604.3	To select transmission elements like gears, belts, pulleys,bearings from the manufacturers' catalogue.		

Course 604.4	To design completely a mechanical system integrating machine elements.
Course 604.5	To produce assembly and working drawings of various mechanical systems involving machine elements like belts, pulleys, gears, springs, bearings, clutches and brakes.

Course Outcome Statement

Course:	Code:17ME653 Course Name: Metal Forming	Faculty:Anjan Kumar	Academic Year: 2019 − 20
		Statement	
Course 605.1	Able to understandthe concept of different metal forming process.		
Course 605.2	Able to approach metal forming processes both analytically and numerically.		
Course 605.3	Able to design metal forming processes.		
Course 605.4	Able to develop approaches and solutions to analyze metal forming processes.		
Course 605.5	Able to develop approaches and solutions to analyze metal forming processes and the associated problems and flaws.		

Course Outcome Statement

Course:	Code:17ME655 Course Name: Automobile Engineering	Faculty: Vijayakumar S.Totad	Academic Year: 2019 − 20
		Statement	
Course 605.1	Identify the different parts of an automobile and it's working		
Course 605.2	Understand the working of transmission and braking systems		
Course 605.3	Comprehend the working of steering and suspension systems		
Course 605.4	Learn various types of fuels and injection systems		
Course 605.5	Understand the cause of automobile emissions,its effects on environment and methods to reduce the emissions		

Course Outcome Statement

Course:	Code:17ME664 Course Name:Total Quality Management	Faculty:Abhishek Dewangan	Academic Year: 2019 − 20
		Statement	
Course 606.1	Explain the various approaches of TQM		
Course 606.2	Infer the customer perception of quality		
Course 606.3	Analyze customer needs and perceptions to design feedback systems		
Course 606.4	Apply statistical tools for continuous improvement of systems		
Course 606.5	Apply the tools and technique for effective implementation of TQM		

Course Outcome Statement

Course:	Code:17MEL67 Course Name:Heat Transfer LAB	Faculty: Vijayakumar S.Totad	Academic Year: 2019 − 20
		Statement	
Course 607.1	Perform experiments to determine the thermal conductivity of a metal rod		
Course 607.2	Conduct experiments to determine convective heat transfer coefficient for free and forced convection and correlate with theoretical values.		
Course 607.3	Estimate the effective thermal resistance in composite slabs and efficiency in pin-fin. Estimate performance of a refrigerator and effectiveness of fin		
Course 607.4	Determine surface emissivity of a test plate		
Course 607.5	Calculate temperature distribution of study and transient heat conduction through plane wall, cylinder and fin using numerical approach.		

Course Outcome Statement

Course:	Code:17MEL68 Course Name: Modeling & Analysis LAB (FEA)	Faculty: Mithun C M	Academic Year: 2019 − 20
		Statement	
Course 608.1	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		
Course 608.2	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		
Course 608.3	Analyze and solve 1D and 2D heat transfer conduction and convection problems with different boundary conditions		
Course 608.4	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		

Course Outcome Statement

Course:	Code:15ME71 Course Name: Energy Engineering	Faculty:Anjan Kumar	Academic Year: 2019 − 20
		Statement	
Course 701.1	Summarize the basic concepts of thermal energy systems, Identify renewable energy sources and their utilization.		
Course 701.2	Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems.		
Course 701.3	Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas		
Course 701.4	Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator.		
Course 701.5	Identify methods of energy storage for specific applications.		

Course Outcome Statement

Course:	Code:15ME72 Course Name: Fluid Power systems	Faculty: Vijayakumar S.Totad	Academic Year: 2019 − 20
		Statement	
Course 702.1	Identify and analyse the functional requirements of a fluid power transmission system for a given application.		
Course 702.2	Visualize how a hydraulic/pneumatic circuit will work to accomplish the function.		
Course 702.3	Design an appropriate hydraulic or pneumatic circuit or combination circuit like electrohydraulics, electro-pneumatics for a given application.		
Course 702.4	Select and size the different components of the circuit. elected for		
Course 702.5	Develop a comprehensive circuit diagramby integrating the components selected for the given application.		

Course Outcome Statement

Course:	Code:15ME73 Course Name:Control Engineering	Faculty: Praveen Kumar/Venkatesh G	Academic Year: 2019 − 20
		Statement	
Course 703.1	Modeling of mechanical, hydraulic, pneumatic and electrical systems.		
Course 703.2	Representation of system elements by blocks and its reduction		
Course 703.3	Transient and steady state response analysis of a system.		
Course 703.4	Frequency response analysis using polar plot.		
Course 703.5	Frequency response analysis using bode plot.		
Course 703.6	Analysis of system using root locus plots.		
Course 703.7	Different system compensators and variable characteristics of linear systems.		

Course Outcome Statement

Course:	Code:15ME742 Course Name: Tribology	Faculty:Mithun C M	Academic Year: 2019 − 20
		Statement	
Course 704.1	Understand the fundamentals of tribology and associated parameters.		
Course 704.2	Apply concepts of tribology for the performance analysis and design of components experiencing relative motion.		
Course 704.3	Analyse the requirements and design hydrodynamic journal and plane slider bearings for a given application.		
Course 704.4	Select proper bearing materials and lubricants for a given tribological application		
Course 704.5	Apply the principles of surface engineering for different applications of tribology		

Course Outcome Statement

Course:	Code:15ME753 Course Code: Mechatronics	Faculty: Prashanth T	Academic Year: 2019 − 20
		Statement	
Course 705.1	Illustrate various components of Mechatronics systems.		
Course 705.2	Assess various control systems used in automation		
Course 705.3	Develop mechanical, hydraulic, pneumatic and electrical control systems.		

Course Outcome Statement

Course:	Code:15MEL76 Course Code:Design Lab	Faculty: Mithun C M	Academic Year: 2019 − 20
		Statement	
Course 706.1	Compute the natural frequency of the free and forced vibration of single degree freedom systems, critical speed of shafts.		
Course 706.2	Carry out balancing of rotating masses		
Course 706.3	Analyse the governor characteristics		
Course 706.4	Determine stresses in disk, beams, plates and hook using photo elastic bench.		
Course 706.5	Determination of Pressure distribution in Journal bearing		

Course Outcome Statement

Course:	Code:15MEL77 Course Name:CIM Lab	Faculty: Praveen Kumar BC	Academic Year: 2019 − 20
		Statement	
Course 707.1	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		
Course 707.2	To educate the students on the usage of CAM packages and cut part on virtual CNC machine simulator.		
Course 707.3	To make the students understand the importance of automation in industries through exposure to FMS, Robotics, and Hydraulics and Pneumatics.		

Course Outcome Statement

Course:	Code:15ME745 Course Name: Smart Materials & MEMS	Faculty: Mohd Rizwan Jafar	Academic Year: 2019 − 20
		Statement	
Course 708.1	This course provides a detailed overview to smart materials, piezoelectric materials structures and its characteristics.		
Course 708.2	The study of Smart structures and modelling helps in Vibration control using smart materials in various applications.		
Course 708.3	Helps to understand the principles and concepts of using MEMS.		
Course 708.4	Helps to understand the principles and concepts of using ER & MR Fluids for various applications.		

Course Outcome Statement

Course:	Code:15ME81 Course Name: Operation Reasearch	Faculty: Praveen Kumar BC / Mohd Rizwan Jafar	Academic Year: 2019 – 20
		Statement	
Course 801.1	Understand the meaning, definitions, scope, need, phases and techniques of operations research.		
Course 801.2	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.		
Course 801.3	Formulate as Transportation and Assignment problems and derive optimum solutions for transportation, Assignment and travelling salesman problems.		
Course 801.4	Solve problems on game theory for pure and mixed strategy under competitive environment		
Course 801.5	Solve waiting line problems for M/M/1 and M/M/K queuing models.		
Course 801.6	Construct networkdiagrams and determine critical path, floats for deterministic and PERT networks including crashing of Networks.		
Course 801.7	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.		

Course Outcome Statement

Course:	Code:15ME82 Course Name: Additive Manufacturing	Faculty:Dr. Suyog	Academic Year: 2019 – 20
		Statement	
Course 802.1	Understand the different process of Additive Manufacturing using polymer, powder and nano-material manufacturing.		
Course 802.2	Analyze the difference characterization techniques		
Course 802.3	Describe the various NC, CNC machine programming and Automation techniques		

Course Outcome Statement

Course:	Code:15ME835 Course Name: Product Life Cycle Management	Faculty:Puneet H M/ Balakrishna	Academic Year: 2019 – 20
		Statement	
Course 803.1	Explain the various strategies of PLM and Product Data Management		
Course 803.2	Describe decomposition of product design and model simulation		
Course 803.3	Apply the concept of New Product Development and its structuring.		
Course 803.4	Analyze the technological forecasting and the tools in the innovation.		
Course 803.5	Apply the virtual product development and model analysis		

Course Outcome Statement

Course:	Code:15ME84 Course Name: Internship / Professional practice	Faculty: Anjan Kumar & Geetha Chavan	Academic Year: 2019 – 20
		Statement	
Course 804.1	Explore career alternatives prior to graduation.		
Course 804.2	Integrate theory and practice.		
Course 804.3	Assess interests and abilities in their field of study.		
Course 804.4	Learn to appreciate work and its function in the economy.		
Course 804.5	Develop work habits and attitudes necessary for job success.		
Course 804.5	Develop communication, interpersonal and other critical skills in the job interview process.		

Course Outcome Statement

Course:	Code:15ME85 Course Name: Project phase 2	Faculty: Mithun C M & Srinivasachari V	Academic Year: 2019 – 20
		Statement	
Course 805.1	Prepare reports and compile data.		
Course 805.2	Prepare presentation and communicate findings to audience		
Course 805.3	Develop skills in searching technical literature, analyzingand evaluating it to compare the various approaches and prepare a written report and also presenting it orally		

Course Outcome Statement

Course:	Code:15MES86 Course Name: Seminar	Faculty: Vijayakumar S.Totad/ Suyog Jhavar	Academic Year: 2019 – 20
		Statement	
Course 806.1	Learn to study in a specialized area by doing literature survey, understanding different aspects of the problem and arriving at a status report in that area.		
Course 806.2	By doing a seminar, the student will learn investigation methodologies, study relevant research papers, correlate work of various authors/researchers critically		
Course 806.3	Study concepts, techniques, prevailing results etc., analyze it and present a seminar report.		
Course 806.4	Capable to give a seminar presentation before a panel(of Senior Faculty members) constituted for the purpose.		