	S J P N Trust's	Mech. Engg. Dept.
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	Inculcating Values, Promoting Prosperity	**Course Outcome**
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Course Outcomes of all the courses from 3rd semester to 8th semester
CBCS 2018 Scheme
III-SEM

Subject: Transform calculus, fourier series and Numerical techniques   Sub. Code: 18MAT31

After successful completion of this course, the students will be able to;

CO	Description
C201.1	Know the use of periodic signals and Fourier series to analyze circuits and system communications.
C201.2	Explain the general linear system theory for continuous-time signals and digital signal processing using the Fourier Transform and z-transform
C201.3	Employ appropriate numerical methods to solve algebraic and transcendental equations.
C201.4	Apply Green's Theorem, Divergence Theorem and Stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems.
C201.5	Determine the external of functional and solve the simple problems of the calculus of variations.

Subject: Mechanics of Materials   **Subject Code: 18ME32**

After successful completion of this course, the students will be able to;

CO	Description
C202.1	Appreciate the concepts of stress, strain, Hooks law , evaluation of deformations in axially loaded bars , Elastic constants and thermal stresses
C202.2	Determine components of stresses on inclined plane at a point subjected to plane stress system by analytically and graphically and stresses induced in pressure vessels.
C202.3	Determine shear forces, bending moments, bending stresses and deflections at all sections of beam subjected to transverse load and couples.
C202.4	Determine the dimensions of shafts based on torsional strength, rigidity and flexibility and also elastic stability of columns using Euler's and Rankin's theory.
C202.5	Explain the concept of strain energy, Castiglione's theorem, Theories of failures and evaluate lateral deflections in beams using strain energy theory.

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Subject: Basic Thermodynamics   **Subject Code: 18ME33**

After successful completion of this course, the students will be able to;

CO	Description
C203.1	Explain fundamentals of thermodynamics and evaluate energy interactions across the boundary of thermodynamic systems.
C203.2	Evaluate the feasibility of cyclic and non-cyclic processes using 2nd law of thermodynamics.
C203.3	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.
C203.4	Interpret the behavior of pure substances and its application in practical problems.
C203.5	Recognize differences between ideal and real gases and evaluate thermodynamic properties of ideal and real gas mixtures using various relations.

Subject: Material Science   **Subject Code: 18ME34**

After successful completion of this course, the students will be able to;

CO	Description
C204.1	Describe the mechanical properties of metals, their alloys and various modes of failure.
C204.2	Understand the microstructures of ferrous and non-ferrous materials to mechanical properties.
C204.3	Explain the processes of heat treatment of various alloys.
C204.4	Understand the properties and potentialities of various materials available and material selection procedures.
C204.5	Understand composite materials and their processing as well as applications.

Subject: Metal casting and welding   **Subject Code: 18ME35A/18ME45A**

After successful completion of this course, the students will be able to;

CO	Description
C205.1	Classify manufacturing process and elaborate the parts of casting process.
C205.2	Categorize the different casting process and select the melting furnace based on ferrous and non-ferrous alloys.
C205.3	Explain the solidification, gasification, casting defects and different methods to achieve directional solidification.
C205.4	Understand and make use of different conventional welding processes.
C205.5	Analyze structure of weld and explain soldering, brazing and NDT.

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Subject: Machine Tools Operations   **Subject Code: 18ME35B/18ME45B**

After successful completion of this course, the students will be able to;

CO	Description
C206.1	Classify and demonstrate basic working of all the machine tools.
C206.2	Explain the different types of relative motions in machining process
C206.3	Explain cutting tool materials, tool geometry, and surface finish and make use of machining equations for cutting operations.
C206.4	Analyze the different mechanics of machining process.
C206.5	Appreciate the concept of tool wear, tool life and economics of machining processes with simple numerical

Subject: Computer Aided Machine Drawing   **Subject Code: 18ME36A/18ME46A**

After successful completion of this course, the students will be able to;

CO	Description
C207.1	Have hands on experience on mechanical modeling software.
C207.2	Draw true shape of sections of polyhedrons.
C207.3	Visualize and draw orthographic views of simple machine components, thread forms, fasteners, riveted, cotter, knuckle joints and couplings as per BIS.
C207.4	Visualize and prepare models of given detailed parts of machine component and its assembly with bill of materials and specifications.

Subject: Mechanical measurements and metrology   **Subject Code: 18ME36B/18ME46B**

After successful completion of this course, the students will be able to;

CO	Description
C208.1	Illustrate the principle of operation and calibration of an instrument and Compare engineering measuring instruments for a particular application
C208.2	Understand the concepts of limits, fits, tolerance and make use of measuring instruments.
C208.3	Make use of concepts of interferometer and screw thread measurement methods.
C208.4	Explain the concepts of measurement, measurement systems and intermediate modifying devices
C208.5	Interpret the working of force, torque, pressure, strain and Temperature measuring devices

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Subject: Material Testing Lab   **Subject Code: 18MEL37A/18MEL47A**

After successful completion of this course, the students will be able to;

CO	Description
C209.1	Demonstrate the applications of metallography and material science.
C209.2	Select the standard experiments to determine the mechanical properties of different materials using UTM, torsion test, fatigue test, hardness test, wear test and impact test.
C209.3	Identify and compare the structure of the materials using metallurgical microscope.
C209 .4	Identify the flaws or defects of materials using NDT methods.
C209 .5	Modify the properties of metal specimens by heat treatment processes.

Subject: Mechanical Measurements and Metrology Lab   **Subject Code: 18MEL37B/47B**

After successful completion of this course, the students will be able to;

CO	Description
C210.1	Select the set of combination of slip gauge height based on given dimensions.
C210.2	Calibrate the Thermocouple, Load cell and LVDT to measure physical quantities.
C210.3	Find major and minor diameters using Two or Three wire method and Angle of screw thread using Toolmaker's microscope.
C210.4	Measure slope or angle of the given work piece using Sine bar, Sine center and Bevel protractor.
C210.5	Measure width and height of gear tooth at pitch circle diameter using Gear tooth vernier calipers

Subject: Workshop and Machine Shop Practice   **Subject Code: 18MEL38A/18MEL48A**

After successful completion of this course, the students will be able to;

CO	Description
C211.1	Able to prepare fitting models according to drawings using fitting tools
C211.2	Able to carry out any kind of operation on Machine tools (Lathe)
C211.3	Capable of preparing various types of jobs accurately to the given dimensions.
C211.4	Able to perform groove cutting and gear cutting operations.

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Subject: Foundry, Forging and Welding lab   Subject Code: 18MEL38B/18MEL48B

After successful completion of this course, the students will be able to;

CO	Description
C212. 1	Demonstrate the applications of basic of Foundry and Forging processes.
C212. 2	Experiment with molding sand to determine tensile, compression and Shear strength of Sand Specimen by USTM.
C212. 3	Evaluate the sand properties by conducting permeability, clay content and sieve analysis tests.
C212. 4	Apply sand molding process through preparation of moulds using two molding boxes with or without patterns.
C212. 5	Determine the length of the raw material required and create the forging models involving upsetting, drawing and bending operations.

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IV-SEM

Subject: Mathematics   **Subject Code: 18MAT41**

After successful completion of this course, the students will be able to;

CO	Description
C216.1	Solve first and second order ordinary differential equations by using appropriate numerical methods.
C216.2	Explain the idea of analyticity, potential field's residues and poles of complex potentials in field theory and electromagnetic theory.
C216.3	Solve Engineering problems using complex variable techniques
C216.4	Explain the basic concepts of probability, random variables, probability distribution and joint probability distribution.
C216.5	Analyze and Evaluate scientific hypotheses using rigorous statistical methods.

Subject: Applied thermodynamics   **Subject Code: 18ME42**

After successful completion of this course, the students will be able to;

CO	Description
C217.1	Recall thermodynamic concepts to analyze the performance of I C engine and gas power cycles including propulsion systems.
C217.2	Analyze Rankine cycle for the improvement in performance of steam power plant.
C217.3	Perform the Combustion analysis of fuels or flue gases and Conduct the performance analysis of I.C. Engines.
C217.4	Compare the working principles and applications of different refrigeration systems and evaluate the psychometric properties of air conditioning systems.
C217.5	Explain the thermodynamic analysis of reciprocating air compressors and function of steam nozzle.

Subject: Fluid Mechanics   **Subject Code: 18ME43**

After successful completion of this course, the students will be able to;

CO	Description
C218.1	Define and formulate the properties of fluids, fluid statics and effect of buoyancy.
C218.2	Interpret and apply the principles of fluid kinematics and dynamics, fluid flow measuring devices.
C218.3	Formulate the correlations for the different fluid flows and analysis of different losses during the flow.
C218.4	Analyze the flow over bodies and dimensional analysis.
C218.5	Understand the basic concepts of compressible flow and CFD.

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Subject: Kinematics of Machines   **Subject Code: 18ME44**

After successful completion of this course, the students will be able to;

CO	Description
C219.1	Identify mechanisms with basic understanding of motion.
C219.2	Comprehend velocity and acceleration analysis of planar mechanisms using graphical method, Instantaneous Center Method and Klein's Construction
C219.3	Comprehend velocity and acceleration analysis of planar mechanisms using analytical method
C219.4	Define gear terminology and identify types of gear, law of gearing, interference and examine gear trains for velocity ratio, tooth load and torque by algebraic and tabular column methods.
C219.5	Carry out motion analysis of cam profiles by analytical and graphical methods.

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V-SEM

Subject: Management and Economics　　　　　　　　　**Subject Code: 18ME51**

After successful completion of this course, the students will be able to;

CO	Description
C301.1	Understand needs, functions, roles, scope and evolution of Management
C 301.2	Understand importance, purpose of Planning and hierarchy of planning and also analyze its types
C 301.3	Discuss Decision making, Organizing, Staffing, Directing and Controlling
C 301.4	Select the best economic model from various available alternatives
C 301.5	Understand various interest rate methods and implement the suitable one.

Subject: Design of Machine Elements-I　　　　　　　**Subject Code: 18ME52**

After successful completion of this course, the students will be able to;

CO	Description
C302.1	Explain phases of design process, mechanical behavior & selection of engineering materials, its codes & standards and stress concentration in machine elements.
C302.2	Determine the behavior of machine components under impact and fatigue loading.
C302.3	Design keys, shafts, joints and couplings.
C302.4	Design of riveted and welded joints.
C302.5	Design of threaded fasteners and power screws

Subject: Dynamics of Machines　　　　　　　　　　**Subject Code: 18ME53**

After successful completion of this course, the students will be able to;

CO	Description
C303.1	Determine the forces and couples for static and dynamic conditions of four bar and slider crank mechanisms to keep the system in equilibrium.
C303.2	Determine magnitude and angular position of balancing masses under static and dynamic condition of rotating and reciprocating masses in same and different planes.
C303.3	Determine sensitiveness, isochronism, effort and power of porter and hartnell governors.
C303.4	Determine gyroscopic couple and effects related to 2, 4 wheeler, plane disc, ship and aero planes.
C303.5	Understand types of vibration, SHM and methods of finding natural frequencies of simple mechanical systems.

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Subject: Turbo Machines   **Subject Code: 18ME54**

After successful completion of this course, the students will be able to;

CO	Description
C304.1	Model studies and thermodynamics analysis of turbo machines.
C304.2	Analyze the energy transfer in Turbo machine with degree of reaction and utilization factor.
C304.3	Classify, analyze and understand various type of steam turbine.
C304.4	Classify, analyze and understand various type of hydraulic turbine.
C304.5	Understand the concept of radial power absorbing machine and the problems involved during its operation.

Subject: Fluid Power Engg.   **Subject Code: 18ME55**

After successful completion of this course, the students will be able to;

CO	Description
C305.1	Identify and analyze the functional requirements of a fluid power transmission system for a given application
C305.2	Visualize how a hydraulic/pneumatic circuit will work to accomplish the function
C305.3	Design an appropriate hydraulic or pneumatic circuit or combination circuit like electro-hydraulics, electro-pneumatics for a given application.
C305.4	Select and size the different components of the circuit
C305.5	Develop a comprehensive circuit diagram by integrating the components selected for the given application

Subject: Operations Management   **Subject Code: 18ME56**

After successful completion of this course, the students will be able to;

CO	Description
C306.1	Explain the concept and scope of operations management in a business context
C306.2	Recognize the role of Operations management among various business functions and its role in the organizations' strategic planning and gaining competitive advantage.
C306.3	Analyze the appropriateness and applicability of a range of operations management systems/models in decision making.
C306.4	Assess a range of strategies for improving the efficiency and effectiveness of organizational operations.
C306.5	Evaluate a selection of frameworks used in the design and delivery of operations

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Subject: Fluid Mechanics and Machinery lab   **Subject Code: 18MEL57**

After successful completion of this course, the students will be able to;

CO	Description
C307.1	Perform experiments to determine the coefficient of discharge of flow measuring devices.
C307.2	Conduct experiments to measure the loss of head in flow through pipes.
C307.3	Determine the force exerted by a jet on different geometry vanes
C307.4	Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations.
C307.5	Conduct the performance of reciprocating Air compressor and Air blower

Subject: Energy Conversion Lab   **Subject Code: 18MEL58**

After successful completion of this course, the students will be able to;

CO	Description
C308.1	Perform experiments to determine the properties of fuels and oils.
C308.2	Conduct experiments on engines and draw characteristics.
C308.3	Test basic performance parameters and the energy flow pattern of I.C. Engine and implement the knowledge in industry.
C308.4	Estimate exhaust emission, factors affecting them and report the remedies.
C308.5	Exhibit his competency towards preventive maintenance of IC engines

Subject: Environmental Studies   **Subject Code: 18CIV59**

After successful completion of this course, the students will be able to;

CO	Description
C309.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
C309.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C309.3	Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.
C309.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
C309.5	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.

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VI-SEM

Subject: Finite Element Analysis　　　　　　　　　　　**Subject Code: 18ME61**

After successful completion of this course, the students will be able to;

CO	Description
C310.1	Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements
C310.2	Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses.
C310.3	Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts
C310.4	Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow
C310.5	Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems

Subject: Design of Machine Element-II　　　　　　　**Subject Code: 18ME62**

After successful completion of this course, the students will be able to;

CO	Description
C311.1	Design and analyze behaviour of stresses in curved beams and compound cylinders.
C311.2	Design belts, wire ropes and chain drives & springs for Mechanical systems
C311.3	Design different types of gears and simple gear boxes for different applications.
C311.4	Design brakes and clutches
C311.5	Select suitable lubricants and analyze performance of hydrodynamic, hydrostatic and antifriction bearings.

Subject: Heat Transfer　　　　　　　　　　　　　　**Subject Code: 18ME63**

After successful completion of this course, the students will be able to;

CO	Description
C312.1	Understand the modes of heat transfer and apply the basic laws to formulate engineering systems.
C312.2	Understand and apply the basic laws of heat transfer to extended surface, composite material and unsteady state heat transfer problems.
C312.3	Analyze heat conduction through numerical methods and apply the fundamental principle to solve radiation heat transfer problems.
C312.4	Analyze heat transfer due to free and forced convective heat transfer.
C312.5	Understand the design and performance analysis of heat exchangers and their practical applications, Condensation and Boiling phenomena.

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Subject: Non Traditional Machining   **Subject Code: 18ME641**

After successful completion of this course, the students will be able to;

CO	Description
C313.1	Understand and compare traditional and non-traditional machining process and recognize the need for Non-traditional machining process.
C313.2	Understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM, AJM and WJM.
C313.3	Understand chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations.
C313.4	Understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM.
C313.5	Understand the LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanism of metal removal, applications, advantages and limitations LBM & EBM.

SUB: PLC & SCADA   **Sub Code: 18EE652**

After successful completion of this course, the students will be able to;

CO	Description
C319.1	Summarize the history, features, hardware, memory organization and basic programming with respect to PLC.
C319.2	Explain basic relay instruction operation and converting narrative expression to Ladder Diagrams.
C319.3	Explain Timer Instructions in PLC and I am able to describe Counter Instructions and Program Control Instructions of PLC.
C319.4	Discuss the execution of data transfer instructions, data compare instructions, arithmetic instructions and the basic operation of PLC closed-loop control system.
C319.5	Describe sequencer, bit shift register and SCADA in conjunction with PLC.

Subject: PROGRAMMING IN JAVA   **Subject Code: 18CS653**

After successful completion of this course, the students will be able to;

CO	Description
C320.1	Explain the object-oriented concepts and JAVA.
C320.2	Develop computer programs to solve real world problems in Java.
C320.3	Develop simple GUI interfaces for a computer program to interact with users.

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SUB: Computer Aided Modeling and Analysis Lab   **Sub Code: 18MEL66**

After successful completion of this course, the students will be able to;

CO	Description
C323.1	Demonstrate the basic features of an analysis package.
C323.2	Use the modern tools to formulate the problem, and able to create geometry, descritize, apply boundary condition to solve problems of bars, truss, beams, plate to find stress with different loading conditions.
C323.3	Demonstrate the deflection of beams subjected to point, uniformly distributed and varying loads further to use the available results to draw shear force and bending moment diagrams.
C323.4	Analyze the given problem by applying basic principle to solve and demonstrate 1D and 2D heat transfer with conduction and convection boundary conditions.
C323.5	Carry out dynamic analysis and finding natural frequencies for various boundary conditions and also analyze with forcing function.

SUB: Heat Transfer Lab   **Sub Code: 18MEL67**

After successful completion of this course, the students will be able to;

CO	Description
C324.1	Perform experiments to determine the thermal conductivity of a metal rod
C324.2	Conduct experiments to determine convective heat transfer coefficient for free and forced convection and correlate with theoretical values.
C324.3	Estimate the effectiveness and efficiency in pin-fin
C324.4	Determine the emissivity of the given test plate and Prove Stefan Boltzmann law of radiation.
C324.5	Conduct and measure the overall heat transfer coefficient, effectiveness of parallel and counter flow heat exchangers.
C324.6	Estimate the heat transfer coefficient for film wise and drop wise condensation processes.
C324.7	Demonstrate the working of Refrigeration and Air-conditioning system.
C324.8	Calculate temperature distribution of study and transient heat conduction through plane wall, cylinder and fin using numerical approach.

SUB: Mini-Project   **Sub Code: 18MEMP68**

After successful completion of this course, the students will be able to;

CO	Description
C325.1	Practice acquired knowledge within the chosen area of technology for project development.
C325.2	Identify the technical aspects of the chosen project
C325.3	Work as an individual or in a team in development of technical projects.
C325.4	Communicate and report effectively project related activities and findings.

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	S J P N Trust's	Mech. Engg. Dept.
	Hirasugar Institute of Technology, Nidasoshi.	Academic
	Inculcating Values, Promoting Prosperity	Course Outcome
	Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi.	
	Accredited at 'A' Grade by NAAC	AY: 2021-22
	Programmes Accredited by NBA: CSE, ECE, EEE & ME	

VII-SEM

Subject: Control Engineering   **Subject Code: 18ME71**

After successful completion of this course, the students will be able to;

CO	Description
C401.1	Recognize control system and its types , control action, and determine the system governing equations for physical models (Electrical, Thermal, Mechanical, Electro Mechanical).
C401.2	Estimate the response and error in response of first and second order systems subjected standard input signals.
C401.3	Calculate the gain of the system using block diagram and signal flow graph for a given application.
C401.4	Analyze a linear feedback control system for stability using Routh"s criterion and root Locus technique in complex domain.
C401.5	Analyze the stability of linear feedback control systems in frequency domain using polar plots, Nyquist and Bode plots.

Subject: Computer Aided Design and Manufacturing   **Subject Code: 18ME72**

After successful completion of this course, the students will be able to;

CO	Description
C402.1	Define Automation, CIM, CAD, CAM and explain the differences between these concepts. And Explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines
C402.2	Solve simple problems of transformations of entities on computer screen and Categorize CAPP, MRP, PPC and CRP in Manufacturing system
C402.3	Understand the overall FMS and Solve the manual assembly line balancing problem
C402.4	Explain the use of different computer applications in manufacturing, and prepare part programs for simple jobs on CNC machine tools and robot programming.
C402.5	Visualize and appreciate the modern trends in Manufacturing like additive manufacturing, Industry 4.0 and applications of Internet of Things leading to Smart Manufacturing

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	S J P N Trust's	Mech. Engg. Dept.
	Hirasugar Institute of Technology, Nidasoshi.	**Academic**
	Inculcating Values, Promoting Prosperity	
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	Programmes Accredited by NBA: CSE, ECE, EEE & ME	**AY: 2021-22**

SUB: Total quality Management   **Sub Code: 18ME734**

After successful completion of this course, the students will be able to;

CO	Description
C406.1	Explain the various approaches of TQM and QMS.
C406.2	Identify the role of leader & leadership styles which helps for their future.
C406.3	Explain the methods to satisfy the customer, employee involvement and motivation techniques.
C406.4	Apply statistical tools for continuous improvement of quality systems
C406.5	Apply the tools and technique for effective implementation of TQM

Subject: Mechatronics   **Subject Code: 18ME754**

After successful completion of this course, the students will be able to;

CO	Description
C411.1	Explain the basics of theory, operation, design and application of sensors and actuators.
C411.2	Explain the basics of architecture, programming and application of microcontrollers and microprocessors.
C411.3	Explain the PLC, basic structure, principle of operations and integration of different elements
C411.4	Apply knowledge of mechanical & electrical actuation systems.
C411.5	Explain the pneumatic and hydraulic actuation system

Subject: CIM LAB   **Subject Code: 18MEL76**

After successful completion of this course, the students will be able to;

CO	Course Outcome
C417. 1	Appreciate NC & CNC machines & its practical use in industry.
C417. 2	Distinguish between absolute & incremental coordinate system.
C417. 3	Make use of computer assisted part programming software to perform milling, drilling and turning operations in design, simulation and manufacturing.
C417. 4	Write manual part programs for milling, turning operations.
C417. 5	Explain what is FMS & ASRS
C417. 6	Develop the robot program by using basic commands.
C417. 7	Read and explain Hydraulics & Pneumatic circuits.

Subject: Design Lab   **Subject Code: 18MEL77**

After successful completion of this course, the students will be able to;

CO	Description
C418.1	To understand the working principles of machine elements such as Governors, Gyroscopes etc
C418.2	To identify forces and couples in rotating mechanical system components
C418.3	To identify vibrations in machine elements and design appropriate damping methods and to determine the critical speed of a rotating shaft
C418.4	To measure strain in various machine elements using strain gauges
C418.5	To determine the minimum film thickness, load carrying capacity, frictional torque and pressure distribution of journal bearing

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	S J P N Trust's	Mech. Engg. Dept.
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	Inculcating Values, Promoting Prosperity	**Course Outcome**
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VIII-SEM

Subject: Energy Engineering   **Subject Code: 18ME81**

After successful completion of this course, the students will be able to;

CO	Course Outcome
C420.1	Understand the construction and working of steam generators and their accessories.
C420.2	Identify solar and biomass renewable energy sources and their utilization.
C420.3	Understand principles of energy conversion from alternate sources including wind, geothermal and tidal.
C420.4	Understand principles of energy conversion from alternate sources including Ocean and hydel.
C420.5	Understand principles of energy conversion from Nuclear energy source.

Subject: Automobile Engineering   **Subject Code: 18ME824**

After successful completion of this course, the students will be able to;

CO	Course Outcome
C424.1	To identify the different parts of an automobile and it's working
C424.2	To understand the working of transmission and braking systems
C424.3	To comprehend the working of steering and suspension systems
C424.4	To learn various types of fuels and injection systems
C424.5	To know the cause of automobile emission, its effects on environment and methods to reduce the emissions.

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