RISE KRISHNA SAI PRAKASAM GROUP OF INSTITUTIONS::ONGOLE

(Approved by AICTE-NEW DELHI. Affiliated to JNTUK KAKINADA)
NH-16, Valluru.-523272. Ongole. Prakasam District. A.P

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOMES **A Y:2018-2019**
I YEAR I SEMESTER

CO No.	Subject: English-I	Taxonomy Level
After completing the course the student shall be able to		
C111.1	Explain the basic concepts of language useful for pupils in their career.	Applying
C111.2	Illustrate the usage of tenses in everyday life.	Understanding
C111.3	Apply the techniques of science through language ability in a practical way.	Applying
C111.4	Make use of grammatical sentences for perfect communication.	Creating
C111.5	Analyze the importance of future tense with examples.	Analyzing
C111.6	Find the speaking and writing skills through reading ability of safety measures.	Applying

CO No.	Subject: Mathematics-I	Taxonomy Level
After completing the course the student shall be able to		
C112.1	Find the solutions of first order ordinary differential equations.	Understanding
C112.2	Apply the technique of solving ordinary differential equations in some engineering problems like electrical circuits, simple harmonic motions etc.	Applying
C112.3	Define Laplace transform and inverse Laplace transform of various functions and solve ordinary differential equations using Laplace transform.	Applying
C112.4	Utilize the technique of partial differentiation to find the extreme values of functions of several variables.	Applying
C112.5	Find the solutions of linear and nonlinear partial differential equations of first order.	Understanding
C112.6	Solve the higher order linear partial differential equations.	Understanding

CO No.	Subject: ENGINEERING CHEMISTRY	Taxonomy Level
After completing the course the student shall be able to		
C113.1	Differentiate the plastics and rubber materials and their uses.	Analysing
C113.2	Explain the origin of fuel and their economic advantages and limitations.	Understanding

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C113.3	Explain the reasons for corrosion and its control methods.	Understanding
C113.4	Describe the synthesis of nano materials and green methods.	Understanding
C113.5	Explain the hardness of water and its softening techniques.	Understanding
C113.6	Discuss the engineering materials like refractories,cement and lubricants.	Understanding

CO No.	Subject: ENGINEERING MECHANICS	Taxonomy Level
After completing the course the student shall be able to		
C114.1	Remember the concept of force system, friction and its applications	Remembering
C114.2	Construct the free body diagrams for different problems and solve the problems using the equilibrium conditions.	Applying
C114.3	Identify the centroid and centre of gravity for different composite sections.	Applying
C114.4	Solve the problems on moment of inertia, mass moment of inertia for different composite sections using parallel axis and perpendicular theorems.	Applying
C114.5	Summarize the motion of a body in general plane motion which includes rectilinear and curvilinear paths.	Understanding
C114.6	Remember the concept of work, power, and energy and calculate these values work-energy and impulse momentum principles.	Remembering

CO No.	Subject: Computer Programming	Taxonomy Level
After completing the course the student shall be able to		
C115.1	Explain the basic terminology used in computer programming.	Understanding
C115.2	Discuss the design of Algorithms, writing and executing programs.	Understanding
C115.3	Explain the different data types, selection and Basic loop structures.	Understanding
C115.4	Apply the modular programming and recursive solution formulations.	Applying
C115.5	Demonstrate the data representations using arrays.	Applying
C115.6	Implement data structures, dynamic memory, create, update data files.	Applying

CO No.	Subject: Engineering Drawing	Taxonomy Level
After completing the course the student shall be able to		
C116.1	Explain the concepts of the ecosystem and its functions in the environment.	Understanding
C116.2	Summarize the natural resources and their importance for the sustenance of life & need to conserve the natural resources	Understanding
C116.3	Demonstrate the values, threats, conservation practices to protect the biodiversity	Applying
C116.4	Describe various attributes of the pollution and their impacts and measures to reduce pollution along with waste management practices	Remembering
C116.5.	Evaluate social issues both rural and urban environment and the possible means to combat the challenges, with help of environmental legislations of India	Evaluating
C116.6	Implement Environmental Impact Assessment, Green campus, business, & politics in their daily life	Applying

CO No.	Subject: English-Communications Skills Lab-I	Taxonomy Level
After completing the course the student shall be able to		
C117.1	Explain the basic concepts of language useful for pupils in their career .	Applying
C117.2	Illustrate the usage of tenses in everyday life.	Understanding
C117.3	Apply the techniques of science through language ability in a practical way.	Applying
C117.4	Make use of grammatical sentences for perfect communication.	Creating
C117.5	Analyze the importance of future tense with examples	Analyzing
C117.6	Find the speaking and writing skills through reading ability of safety measures.	Applying

CO No.	Subject: ENGINEERING CHEMISTRY LAB	Taxonomy Level
After completing the course the student shall be able to		
C118.1	Describe the experimental skills to design new experiments in engineering	Understanding
C118.2	Explain the different types of titrations and acquire skills in instrumentation	Understanding
C118.3	Determine hardness of various water samples	Evaluating
C118.4	Determine the no of free ions and charges in a mixture of acids using conductivity meter	Understanding
C118.5	calculate the potential between reference electrode and un known solution by using potentio meter	Understanding

CO No.	Subject: C- PROGRAMMING LAB	Taxonomy Level
After completing the course the student shall be able to		
C119.1	Explain the basic terminology of C programming development environment	Understanding
C119.2	Discuss the procedure of Algorithms, writing, compiling, debugging and executing Programs	Understanding
C119.3	Analyzing the complexity of problems and modular programming	Understanding
C119.4	Understand and apply the in-built and user defined functions for solving problems.	Applying
C119.5	Understand and apply the pointers and memory allocations techniques for solving Problems.	Applying
C119.6	Implement different data structures, and create, update data files	Applying

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DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOMES **A Y:2018-2019**

I YEAR II SEMESTER

CO No.	Subject: English-II	Taxonomy Level
After completing the course the student shall be able to		
C121.1	Acquire the knowledge of education and how to serve the society accordingly	Remembering
C121.2	Classify the different perspective of science in the sense of a common man and scientist	Understanding
C121.3	Apply the knowledge to adjust ourselves towards the environmental conditions in the society	Applying
C121.4	Create an awareness on the present day and traditional beliefs	Applying
C121.5	Create the awareness on health threats due to climate changes.	Applying
C121.6	Identify the greatness and the hard work of the pioneers and try to inspire in attainting language communication skills	Remembering

CO No.	Subject: Mathematics-III	Taxonomy Level
After completing the course the student shall be able to		
C122.1	Applying analytical and numerical techniques to solve linear system of equations using matrices.	Applying
C122.2	Find the Eigen values and Eigen vectors of the square matrices and discuss the nature of quadratic forms.	Remembering
C122.3	Applying the techniques of multiple integrals to find the areas and volumes.	Applying
C122.4	Find the values of definite integrals using Beta and Gamma functions.	Remembering
C122.5	Find the gradient of scalar point functions, divergence and curl of vector point functions.	Remembering
C122.6	Applying Green's, Stokes and Gauss's divergence theorems to find line, surface and volume integrals	Applying

CO No.	Subject: Mathematics-II	Taxonomy Level
After completing the course the student shall be able to		

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C123.1	Find a root of algebraic and transcendental equations.	Remembering
C123.2	Define interpolation and compute interpolating polynomial from the given data using interpolating formula.	Remembering
C123.3	Solve differential equations using numerical methods.	Applying
C123.4	Find Fourier series of periodic functions in a given interval.	Remembering
C123.5	Classify and solve the different types of partial differential equations.	Understanding
C123.6	Find the Fourier Transform of certain functions.	Understanding

CO No.	Subject: BASIC ELECTRICAL ELECTRONICS ENGINEERING	Taxonomy Level
C124.1	Analyze the various electrical networks.	Analyzing
C124.2	Understand the operation of DC generator ,3-point starter abd DC machine testing using swimburns	Understanding
C124.3	Analyse the performance of single-phase transformer.	Analyzing
C124.4	Explain the operation of 3-phase alternator and 3-phase induction motors	Remembering
C124.5	Analyse the operation of half wave, full wave bridge rectifiers and OP-AMPs.	Analyzing
C124.6	Explain the single stage CE amplifier and concept of feedback amplifier.	Remembering

CO No.	Subject: ENGINEERING PHYSICS	Taxonomy Level
After completing the course the student shall be able to		
C125.1	Explain the properties of light supporting the wave nature and working of optical instruments based on it.	Understanding
C125.2	Apply Lasers in scientific research and engineering by developing knowledge on basic principle in the working of Lasers & optical fibers. Develop knowledge on different types of crystal structures & x-ray diffraction.	Understanding
C125.3	Describe the concept of Electrical or Electronic gadgets and their performance under E- or H- fields.	Applying
C125.4	Explain the concept of Double refraction, Design and working of Nicol prisn, polarimeter, and study the	Applying

	Concept of polarization	
C125.5	Explain the concept of Acoustics of Buildings, and the behavior of materials in the external magnetic and electric fields and physical significance of Maxwell's equations.	Applying
C125.6	Explain the Binding energy, mass defect, nuclear fission, and nuclear fission concepts in nuclear reacotors.	Understanding

CO No.	Subject: ENGINEERING DRAWING	Taxonomy Level
C126.1	Learn the usage of drawing instruments and how to draw Polygons, Engineering Curves and Scales	Remembering
C126.2	Explain about the Orthographic Projections, Projection of Points And Lines	Understanding
C126.3	Solve and draw the projections of straight lines inclined to both the planes	Applying
C126.4	Solve and draw the projection of planes.	Applying
C126.5	Solve and draw the projection of solids.	Evaluating
C126.6	Develop the Isometric Views to Orthographic Views and vice versa.	Applying

CO No.	Subject: English Communication Skills Lab-II	Taxonomy Level
After completing the course the student shall be able to		
C127.1	Explain the importance of body language	Understanding
C 127.2	Summarize the skill of general English through dialogue	Understanding
C 127.3	Develop short presentations on simple topics	Applying
C 127.4	Summarize training offered to students through Group Discussion	Analyzing
C 127.5	Describe the stand of interview skills through that students will successes	Remembering
C 127.6	Explain the knowledge ability to communicate the needs and requirements of Debate	Understanding

CO No.	Subject: ENGINEERING PHYSICS LABORATORY	Taxonomy Level
After completing the course the student shall be able to		
C128.1	Explain the appropriate application of Optics in Newton rings .	Understanding
C 128.2	Explain the appropriate application of Optics in Diffraction Grating .	Understanding
C 128.3	Apply the basic concepts of laser and techniques for the optics experiments.	Applying
C 128.4	Apply the mathematical concepts/equations to obtain quantitative results.	Applying
C 128.5	Explain the basic concepts of semiconductor physics, which are useful to understand the operation of Zener diode and PN junction diode	Understanding

CO No.	Subject: ENGINEERING WORK SHOP & IT WORK SHOP	Taxonomy Level
After completing the course the student shall be able to		
C129.1	Identify the different tools and prepare prototypes in the trades of Carpentry and Tinsmithy such as Cross half lap joint, Dove tail joint, rectangular Tray and Open scoop	Understanding
C129.2	Identify the different tools and prepare prototypes in the trades of Fitting and Black smithy such as Square fit, V- fit and S-Hook	Understanding
C129.3	Apply the various House Wiring techniques such as connecting one lamp with one switch, connecting one lamp with two switches, connecting a fluorescent tube.	Analyzing
C129.4	Apply the knowledge for computer assembling, software installation and trouble shoot and up gradation of system.	Applying
C129.5	Learn MS-office package, internet tools and Apply the tools for preparation of PPT, Documentation and spread sheet etc.	Applying
C129.6	Identify the different tools and prepare prototypes in the trades of Carpentry and Tinsmithy such as Cross half lap joint, Dove tail joint, rectangular Tray and Open scoop.	Applying

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RISE KRISHNA SAI PRAKASAM GROUP OF INSTITUTIONS
DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: II / I

At the end of the course student will be able to

Course Name: C211 Metallurgy & Material Science		**BT LEVEL**
C211.1	To know the basic concepts of bonds in metals, alloys and understand the basic requirements for the formation of solid solutions and other compounds	Understanding
C211.2	Interpret the phase diagrams of materials that occur in an alloy system in order to solve the problems in practical metallurgy	Remembering
C211.3	Classify and Distinguish different types of cast irons, steels and Can select metals and alloys for engineering applications.	Understanding
C211.4	Gain knowledge on the effects of various alloying elements on iron-iron carbide system and understand the various heat treatment and strengthening processes used in practical applications for improving properties.	Applying
C211.5	Gain knowledge on the properties and applications of widely used non-ferrous metals and alloys so as to use the suitable material for practical applications.	Applying
C211.6	Compare the properties of ceramics, glasses, composites, polymers and other advanced materials applications so as to use the suitable material for practical and industrial applications.	Applying
Course Name: C212 Mechanics of Solids		
C212.1	Establish the relations between various stresses and strains, Elastic constants and also determine the principal stresses and planes and strain energy for various loadings.	Applying
C212.2	Construct the Shear force and bending moment diagrams of statically determinant beams under various loading.	Evaluating
C212.3	Analyze the bending stresses and shear stresses in beams of various cross- sections.	Analyzing
C212.4	Apply the various concepts for determining slope and deflections of different beams under different loads.	Applying
C212.5	Derive various stresses in thick and thin cylinders.	Understanding
C212.6	Explain the concept of Torsion and columns.	Understanding
Course Name: C213 Thermo dynamics		
C213.1	The basic concepts of thermodynamic such as temperature, pressure, system, properties, process, state, cycles and equilibrium. Also apply the first Law of Thermodynamics on closed and control volume systems	Understanding
C213.2	The basic concepts of open system, SFEE, PMM-1. The concept of equality of temperature and various temperature measuring devices.	Understanding
C213.3	Second Law of Thermodynamics and entropy concepts in analyzing the thermal efficiencies of heat engines, heat pump, refrigerator and also the Carnot cycle. Also analyze the concepts	Analyzing

	of availability, Irreversibility and Maxwell relations	
C213.4	The process of steam formation and various property diagrams with phase changes and also calculate the quality of steam after expansion.	Analyzing
C213.5	Psychometric chart and analyze the various psychometric properties air.	Analyzing
C213.6	Concept of air standard cycles and also analyzes the various parameters related to efficiency of the air standard cycles.	Analyzing
Course Name: C214 Managerial Economics & Financial Analysis		
C214.1	Relate Economic Principles with Business Practices for getting successful outcomes.	Remembering
C214.2	Make use of Cost analysis to find Break Even Point (BEP) of an enterprise in order to avoid losses.	Applying
C214.3	Compare the Price – out determinations under different competitions in the Markets and Pricing strategies.	Understanding
C214.4	Interpret different forms of business organizations and the new economic environment in the real business.	Understanding
C214.5	Make use of the financial statements and relevant ratios for evaluating company's financial performance to make optimal decisions.	Applying
C214.6	Illustrate different Capital Budgeting Methods to estimate the best investment decision in business practices.	Understanding
Course Name: C215 Fluid Mechanics and Hydraulic Machines		
C215.1	Explain the effect of fluid properties on a flow system.	Understanding
C215.2	Identify type of fluid flow patterns and describe continuity equation.	Remembering
C215.3	To analyze a variety of practical fluid flow and measuring devices and utilize fluid mechanics principles in design.	Analyzing
C215.4	To select and analyze an appropriate turbine with reference to given situation in power plants.	Analyzing
C215.5	To estimate performance parameters of a given Centrifugal and Reciprocating pump.	Analyzing
C215.6	Demonstrate boundary layer concepts.	Remembering
Course Name: C216 Computer Aided Engineering Drawing Practice		
C216.1	Draw the projection of solids and auxiliary views.	Remembering
C216.2	Produce the sectional views of solids and developments of surfaces	Remembering
C216.3	Construct perspective projections and Intersection of solids.	Applying
C216.4	Select various tools in AUTO-CAD for generation of points, lines, and circles.	Remembering
C216.5	Produce 2-D models by using CAD commands.	Applying
C216.6	Produce 3-D models by using CAD commands.	Applying

Faculty coordinator

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Head of the Department

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RISE KRISHNA SAI PRAKASAM GROUP OF INSTITUTIONS
DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: II / I

At the end of the course student will be able to

Course Name: C217 Basic Electrical and Electronics Engineering Lab		**BT LEVEL**
C217.1	Analyze the various electrical networks	Analyzing
C217.2	Understand the operation of DC generators,3-point starter and conduct the Swinburne's Test.	Understanding
C217.3	Analyze the performance of transformer.	Analyzing
C217.4	Explain the operation of 3-phase alternator and 3-phase induction motors.	Understanding
C217.5	Analyze the operation of half wave, full wave rectifiers and OP-AMPs.	Analyzing
C217.6	Explain the single stage CE amplifier and concept of feedback amplifier.	Understanding
Course Name: C218 Mechanics of Solids and Metallurgy Lab		
C218.1	Determine the tensile, compressive and shear strength	Evaluating
C218.2	Determine the toughness of a material	Evaluating
C218.3	Determine stiffness and hardness of a material.	Evaluating
C218.4	Classify and Distinguish different types of cast irons &steels.	Understanding
C218.5	Determine hardenability of steels	Evaluating
C218.6	Study the Micro structures of different materials	Understanding

Faculty coordinator

Head of the Department
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RISE KRISHNA SAI PRAKASAM GROUP OF INSTITUTIONS
DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: II / II

At the end of the course student will be able to

Course Name: C221 Kinematics of Machinery		**BT LEVEL**
C221.1	Visualize a four bar mechanisms and their inversions.	Understanding
C221.2	Describe various types of straight line motion mechanisms and their applications.	Understanding
C221.3	Determine velocity and accelerations of various mechanisms using graphical and Instantaneous methods.	Evaluating
C221.4	Construct cam profiles for various types of follower motions.	Applying
C221.5	Explain the principle of higher pairs used for power transmission.	Understanding
C221.6	Analyze various power transmission mechanisms like belts, chains, ropes and gear trains and apply them appropriately.	Analyzing
Course Name: C222 Thermal Engineering -I		
C222.1	Differentiate realistic and unrealistic thermodynamic cycles and their efficiencies.	Analyzing
C222.2	Understand the working principles of different types of internal combustion engines.	Understanding
C222.3	Understand the combustion processes and methods to improve the combustion processes in different types of internal combustion engines	Understanding
C222.4	Calculate efficiency and power developed in internal combustion engine with a given set of operational parameters.	Applying
C222.5	Understand the working principles of different types of compressors and its minimum work requirement.	Understanding
C222.6	Calculate efficiency and power requirement of compressors with a given set of operational parameters.	Applying
Course Name: C223 Production Technology		
C223.1	Overall process of casting and different methods in casting & applications.	Understanding
C223.2	Concept of different methods in casting & applications, Methods of melting and types of furnaces.	Remembering
C223.3	Concept of welding & different welding methods such as gas welding and arc welding	Remembering
C223.4	Advanced welding processes and their Applications.	Understanding
C223.5	Different forming process such as Forging, Rolling and Extrusion.	Understanding
C223.6	Different types of sheet metal forming and processing of plastics.	Understanding

Course Name: C224 Design of Machine Members-I		
C224.1	Understand the knowledge on combined stress and strain on mechanical members and understand theories of failures	Remembering
C224.2	Understand the concept of stress concentration, notch sensitivity, fatigue analysis to develop safety factors, failures and calculation of endurance strength	Creating
C224.3	Design different machine elements such as fasteners like riveted, bolted and welded joints	Creating
C224.4	Design keys, shafts, cotters and knuckle joints	Creating
C224.5	Design various couplings using used in fastening	Creating
C224.6	Design various springs used in suspension systems	Creating
Course Name: C225 Machine Drawing		
C225.1	Familiarize drawing practice of various joints, simple mechanical parts selection of views. Draw various joints, keys, nuts and threads, shaft couplings. Draw the journal, pivot, collar and footstep bearing. Pivot, collar and footstep bearing.	Understanding
C225.2	Construct an assembly drawing using part drawings of machine parts, engine parts and Valves	Applying
Course Name: C226 Industrial Engineering and Management		
C226.1	Explain basic concept of industrial engineering and various theories of scientific management.	Remembering
C226.2	Explain the Concept Of Plant Layout, Optimal Design Of Layouts, Plant Maintenance	Understanding
C226.3	Discuss concept of operations management, learn method study and time study	Applying
C226.4	Explain concept of statistical quality control, various control charts and their applications	Applying
C226.5	Explain concept of Concept of human resource management quantitative methods, wage incentive plans.	Applying
C226.6	Discuss concept and design of Value engineering, project management (PERT/CPM)	Analyzing

Faculty coordinator

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DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: II / II

At the end of the course student will be able to

Course Name: C227 Fluid Mechanics and Hydraulic Machines Lab		**BT LEVEL**
C227.1	Evaluate the force exerted by a jet on different vane	Evaluating
C227.2	Evaluate the performance of turbines	Evaluating
C227.3	Evaluate the performance of pumps	Evaluating
C227.4	Determine the coefficient of discharge of Venturi-meter and Orifice-meter	Evaluating
C227.5	Determine friction losses in a pipe line	Evaluating
C227.6	Determine the flow in a pipe using turbine flow meter	Evaluating
Course Name: C228 Production Technology Lab		
C228.1	Design a pattern for making metal casting	Creating
C228.2	Determine the strength and permeability of sand for mould preparation	Evaluating
C228.3	Perform joining of metals using different welding methods	Understanding
C228.4	Perform blanking and piercing operations and study about types of dies	Understanding
C228.5	Perform deep drawing, extrusion and bending operations	Understanding
C228.6	Perform injection moulding and blow moulding by processing of plastics	Understanding

Faculty coordinator

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RISE KRISHNA SAI PRAKASAM GROUP OF INSTITUTIONS
DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: III / I

At the end of the course student will be able to

Course Name: C311 Dynamics of Machinery		
C311.1	Analyze the effect of gyroscopic couple on sea vehicles, aircrafts and two and four wheelers	Analyzing
C311.2	Apply the concept of friction on clutches, brakes and dynamometers	Applying
C311.3	Compute the fluctuation of flywheels, inertia torque, velocity and acceleration of connecting rod	Applying
C311.4	Discuss the function of governors and its principle	Understanding
C311.5	Explain the concept of balancing of reciprocating and rotary masses	Understanding
C311.6	Determine the natural frequencies of continuous systems starting from the general equation of displacement	Understanding
Course Name: C312 Metal Cutting & Machine Tools		
C312.1	Analyze cutting forces acting on the work piece and cutting tool. Also will gain knowledge on tool life, tool materials and coolants.	Analyzing
C312.2	Illustrate and categorize the lathe machines its principles and its operations.	Understanding
C312.3	Select a specified machine among shaping, slotting, and planning, drilling and boring machines for a specific type of metal removal operation depending upon shape, size, and material speed.	Understanding
C312.4	Perform milling operation using indexing plate and various types of miller cutters to produce slots (Gear teeth).	Applying
C312.5	Do surface grinding operation in various methods using types of abrasive tools and will know about the other similar operations.	Understanding
C312.6	Execute a simple program for the motion controls in CNC Machine or for machining a component and can design jigs and fixtures,	Applying
Course Name: C313 Design of Machine Members-II		
C313.1	Select the suitable bearing based on the Application of the loads and predict the life of the bearing.	Remembering
C313.2	Design of engine parts such as connecting rod, piston, crank shafts, cylinder, cylinder line, pins	Creating
C313.3	Design of curved beams like, rectangular, circular, trapezoidal and 'T' sections , crane hooks, and 'C' clamps	Creating
C313.4	Design power transmission elements such as gears, belts, chains, Pulleys, ropes, levers and power screws	Creating
C313.5	Capable to design of gear drives, dynamic load factor, compressive strength, bending strength, estimation of center	Creating

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	distance, module and face width, wear conditions of spur gear, helical gear. Design of screws such as square buttress, design of nut, compound screw and differential screw.	
C313.6	Design of levers, brackets and stresses in Wire ropes	Creating
Course Name: C314 Operation Research		
C314.1	Solve the linear programming problems.	Applying
C314.2	Solve transportation and assignment problems.	Applying
C314.3	Solve replacement problems.	Applying
C314.4	Solve game theory, queuing problems.	Applying
C314.5	Solve inventory problems.	Applying
C314.6	Discuss about dynamic programming and simulation to LPP and inventory problems.	Understanding
Course Name: C315 Thermal Engineering-II		
C315.1	Calculate the efficiency of the Rankine vapor power cycle and effect of operating variables on efficiency of Rankine Cycle.	Applying
C315.2	Understand the construction details and working of boilers, mountings and accessories of boilers.	Applying
C315.3	Identify & apply fundamentals to solve problems involving nozzles	Applying
C315.4	Analyze the velocity diagrams and efficiency of Impulse and Reaction turbines.	Analyzing
C315.5	Understand the functionality of major components of gas turbine plants	Applying
C315.6	Understand the functionality of major components of gas turbine plants.	Applying

Faculty Coordinator

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DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019** **Year / Sem: III / I**

At the end of the course student will be able to

Course Name: C316 Theory of Machines Lab		**BT LEVEL**
C316.1	Determine whirling speed of a shaft theoretically and experimentally, frequency of damped force vibration, un-damped free vibration of a spring mass system	Analyzing
C316.2	Determine the position of sleeve and plot the characteristic curve of a Hartnell governor at different speeds and radius of rotation	Analyzing
C316.3	Analyse the motion of gyroscope when the couple is applied at the axis of spin	Analyzing
C316.4	Determine the moment of inertia of flywheel and coefficient of friction between belt and pulley	Analyzing
C316.5	Demonstrate the function of simple and compound screw jack, static and dynamic balancing using rigid blocks and various types of gears-Spur, Helical, Worm and Bevel Gears	Understand
C316.6	Plot slider displacement, velocity and acceleration against crank rotation for single slider crank mechanism/Four bar mechanism and follower displacement vs cam rotation for various Cam Follower systems	Analyzing
Course Name: C317 Machine Tools Lab		
C317.1	Identify and know the general purpose of machines.	Understanding
C317.2	Perform turning, knurling and thread cutting on lathe.	Understanding
C317.3	Perform drilling and tapping operations.	Understanding
C317.4	Perform shaping, planning, slotting operations on different machines	Understanding
C317.5	Work with indexing plate and produce groves using milling machines	Understanding
C317.6	Perform cylindrical surface grinding and grinding of tool angles	Understanding
Course Name: C318 Thermal Engineering Lab		
C318.1	Plot the valve timing and port timing diagrams for 2 stroke and 4 stroke IC engines.	Remembering
C318.2	Conduct constant speed and variable speed tests on IC engines and interpret their Performances and estimate fuels viscosity.	Evaluating
C318.3	Estimate energy distribution by conducting heat balance test on IC engines.	Evaluating
C318.4	Conduct the performance test on reciprocating air compressor.	Evaluating
C318.5	Demonstrate the procedure for assembly & dis-assembly of 2 stroke and 4 stroke IC engines.	Remembering
C318.6	Demonstrate about boilers, mountings and accessories.	Remembering

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Year / Sem: III / II

At the end of the course student will be able to

Course Name: C321 Metrology		**BT LEVEL**
C321.1	Design tolerances and fits for selected product quality.	Creating
C321.2	Explain various linear, angle, taper measurements instruments and different gauges.	Understanding
C321.3	Explain the principles of optical measuring instruments and Interferometer.	Understanding
C321.4	Differentiate surface roughness and surface waviness and various methods of measurement of surface roughness and comparators.	Analyzing
C321.5	Describe various gear measurement and screw thread measurement instruments.	Understanding
C321.6	Use various tools in aligning lathe, drilling and milling machines and explain various flatness measurement instruments	Understanding
Course Name: C322 Instrumentation & Control Systems		
C322.1	Explain concept of the generalized configuration of measurements, errors, and various potentiometers	Remembering
C322.2	Explain the construction working of various temperature and pressure measurement instruments	Understanding
C322.3	Discuss the construction & working of instruments measures level speed & flow.	Applying
C322.4	Discuss the construction & working. of various strain gauges & strain gauge rosettes.	Applying
C322.5	Explain the construction & working of instruments measures humidity, force, torque & power.	Applying
C322.6	Discuss the elements of control system & speed ,position control systems	Analyzing
Course Name: C323 Refrigeration & Air-conditioning		
C323.1	Explain the terminology associated with Refrigeration and understand the different applications of Refrigeration.	Understanding
C323.2	Explain Working principle and essential components of the VCR system and understand different methods to improve COP of VCR system.	Understanding
C323.3	Describe about different types of refrigerants and VCR system components.	Remembering
C323.4	Demonstrate working principle and basic components of VAR system and Steam jet refrigeration	Understanding
C323.5	Apply the basic principles of psychrometry and applied psychrometrics	Applying

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C323.6	Describe heating and cooling load conditions for humidified space and dehumidified space.	Remembering
Course Name: C324 Heat Transfer		
C324.1	Understand the modes and of mechanisms of heat transfer.	Applying
C324.2	Explain The significance of Biot and Fourier numbers and to know the fin efficiency.	Applying
C324.3	Understand the use of non dimensional numbers in choosing the right empirical formulae for calculating the heat transfer from a object.	Applying
C324.4	Use the empirical correlations for convective heat transfer for various cross sections.	Understanding
C324.5	Calculate the efficiency and effectiveness of different types of heat exchangers	Applying
C324.6	Understand the basics and laws of radiation heat transfer.	Understanding
Course Name: C325 Industrial Robotics		
C325.1	Attain the knowledge in automation, robotics, CAD/CAM & importance of robotics.	Understanding
C325.2	Design various robotic components by using the basic concepts.	Analyzing
C325.3	Calculate the transformations & manipulators problems	Applying
C325.4	Illustrate the concept of Euler-language & Newton-Euler formulations to solve the dynamic problems.	Applying
C325.5	Develop the Knowledge of trajectory planning of manipulators and Develop programming principles and languages for a robot control system	Creating
C325.6	Analyze the manipulator design including actuator, drive and sensor issues and discuss various applications of industrial robot systems.	Analyzing

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DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: III / II

At the end of the course student will be able to

Course Name: C326 Heat Transfer Lab		**BT LEVEL**
C326.1	Understand the modes and of mechanisms of heat transfer.	Applying
C326.2	Explain The significance of Biot and Fourier numbers and to know the fin efficiency.	Applying
C326.3	Understand the use of non dimensional numbers in choosing the right empirical formulae for calculating the heat transfer from a object.	Applying
C326.4	Use the empirical correlations for convective heat transfer for various cross sections.	Understanding
C326.5	Calculate the efficiency and effectiveness of different types of heat exchangers	Applying
C326.6	Understand the basics and laws of radiation heat transfer.	Understanding
Course Name: C327 Metrology and Instrumentation Lab		
C327.1	Students will be able to design tolerances and fits for selected product quality. Identify the basic concepts of new measurement systems and various calibration processes	Applying
C327.2	Understand the standards of length, angles and also design gauges for measurements of different products. Classify the various processes in temperature and pressure measurement system.	Understanding
C327.3	Understand the optical principles, and its applications for measurements of the small components. Apply different methods to measure the level, flow, speed, acceleration and vibration etc.	Understanding
C327.4	Understand the evaluation of surface finish and measure the parts with various comparators. Analyze various types of components in stress, strain measuring system.	Understanding
C327.5	Choose appropriate method and instruments for inspection of various gear elements and thread elements. Design an appropriate device for the measurement of parameters like humidity, force, power and torque and justify its use through characteristics	Evaluating
C327.6	Evaluate the quality of the machine tool with the help of alignment test. Evaluate and interpret the results of measuring systems	Evaluating

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Course Name: C328 Computational Fluid Dynamics Lab		
C328.1	Understand the program structure of differentiation, Integration, various algebraic equations using C and MATLAB.	Understanding
C328.2	Understand the program structure of partial differential equations using C and MATLAB.	Understanding
C328.3	Understand the program structure of 1D and 2D heat conduction using C and MATLAB.	Understanding
C328.4	Understand the program structure of Incompressible and In-viscid fluid flowing using C and MATLAB.	Understanding
C328.5	Perform various heat transfer modes, Lumped heat transfer, Steady state conduction heat transfer using ANSYS.	Analysis

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Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: IV / I

At the end of the course student will be able to

Course Name: C411 Automobile Engineering		**BT LEVEL**
C411.1	Explain the constructional, working principle of various sub system of an automobile.	Understanding
C411.2	Explain the constructional, working principle of various types of manual and automotive transmission of an automobile.	Understanding
C411.3	Explain different steering mechanisms and their working principles.	Understanding
C411.4	Describe all the theoretical information of suspension, braking and electrical components used in a vehicle.	Understanding
C411.5	Discuss the detailed concept, construction and principle of operation of engine and various engine components, combustion, cooling, lubrication systems and safety systems will be taught to the students.	Understanding
C411.6	Describe the various techniques to avoid the pollution formation from automobiles and engine service.	Understanding
Course Name: C412 CAD/CAM		
C412.1	Learn computer application in various design techniques as required in manufacturing industries.	Evaluating
C412.2	Lines, parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix	Understanding
C412.3	Learn various part programming for Computer aided design and manufacturing	Evaluating
C412.4	Describe the use of GT , production flow analysis and CAPP	Remembering
C412.5	Identify the CAQC using contact and non contact inspection methods.	Analyzing
C412.6	Illustrates concepts of integrated manufacturing system.	Applying
Course Name: C413 Finite Element Methods		
C413.1	Correlate a differential equation and its equivalent integral form.	Creating
C413.2	Develop the element stiffness matrix characteristic equation procedure and generation of global stiffness equation will be applied able to numerically solve for stresses, strains and deformation of a structural component.	Creating
C413.3	Identify the application and demonstrate the ability to create models for different components such as trusses, bars, beams, plane isoperimetric elements, and 3-D element etc.using ANSYS general-purpose software.	Applying
C413.4	Implement the formulation techniques to solve two-dimensional problems using triangle and quadrilateral elements.	Applying
C413.5	Formulate and solve Higher order and isoparametric elements.	Analyzing

C413.6	Finite element methods and modeling two dimensional analysis for solving dynamic, Eigen values , Eigen vectors, and free vibration analysis problems using ANSYS general-purpose software.	Analyzing
Course Name: C414 Unconventional Machining Process		
C414.1	Compare Conventional and Non-Conventional machining and analyze the different elements of Ultrasonic Machining and its applications	Understanding
C414.2	Explain the different elements of Chemical and Electro chemical Machining and its applications.	Understanding
C414.3	Illustrate different parameters of Electrical Discharge Machining, electric discharge grinding	Applying
C414.4	Analyze the different elements of Laser and Electronic Beam machining.	Analyzing
C414.5	Explain the process and mechanism in Plasma Arc Machining.	Understanding
C414.6	Illustrate the variables in Abrasive Jet Machining, magnetic abrasives finishing, abrasives flow finishing.	Applying
Course Name: C415 Nano Technology		
C415.1	Identify the essential concepts used in nanotechnology.	Remembering
C415.2	Identify the materials & properties	Remembering
C415.3	Syntheses and fabrication	Understanding
C415.4	Characterization	Understanding
C415.5	Applications in various fields.	Applying
C415.6	Identify the essential concepts used in nanotechnology.	Remembering
Course Name: C416 Automation in manufacturing		
C416.1	Apply the basic concepts of automation in machine tools.	Applying
C416.2	Know Various automated flow lines and transfer lines.	Understanding
C416.3	Analyze assembly systems and line balancing methods.	Analyzing
C416.4	Demonstrate automated material handling system, automated storage systems and retrieval systems in production.	Understanding
C416.5	Apply the importance of adaptive control systems.	Applying
C416.6	Compare various automated inspection systems.	Understanding

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Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: IV / I

At the end of the course student will be able to

Course Name: C417 Simulation Lab		**BT LEVEL**
C417.1	Draw complex geometries of machine components in sketcher mode	Remembering
C417.2	Write programs to generate analytical and synthetic curves used in engineering practice.	Remembering
C417.3	Generate freeform shapes in part mode to visualize components	Creating
C417.4	Create complex engineering assemblies using appropriate assembly constraints	Creating
C417.5	Develop G and M codes for turning and milling components. Generate automated tool paths for a given engineering component	Creating
C417.6	Generate automated tool paths for a given engineering component.	Creating
Course Name: C418 Design Fabrication Project		
C418.1	Identify a topic in advanced areas of Mechanical Engineering	Understanding
C418.2	Review literature to identify gaps and define objectives & scope of the work.	Understanding
C418.3	Develop a prototypes/models, experimental set-up and software systems necessary to meet the objectives.	Creating
C418.4	Analyze and discuss the results to draw valid conclusions.	Analyzing
C418.5	Prepare a report as per recommended format and defend the work.	Understanding
C418.6	Understand advanced technological solutions to engineering problems.	Understanding

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At the end of the course student will be able to

Course Name: C421 Production Planning and Control		**BT LEVEL**
C421.1	Apply the systems concept for the design of production and service systems.	Applying
C421.2	Make forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.	Applying
C421.3	Apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources.	Applying
C421.4	Understand the importance and function of routing and to be able to apply selected methods for preparing route sheets.	Applying
C421.5	Identify different strategies employed in Scheduling techniques and methods used in industries.	Remembering
C421.6	Measure the effectiveness, identify likely areas for improvement, develop and implement improved planning and control methods for dispatching.	Remembering
Course Name: C422 Green Engineering Systems		
C422.1	Explain concept of solar radiation, design and concept of solar collectors.	Understanding
C422.2	Discuss the concept of solar energy storage ,its applications and basics of wind energy	Understanding
C422.3	Describe concept of bio mass energy ,geothermal energy and ocean energy	Understanding
C422.4	Explain concept of Energy efficient systems of mechanical and electrical	Understanding
C422.5	Explain concept of Energy efficient systems	Understanding
C422.6	Explain concept and design of green building.	Understanding
Course Name: C423 Power Plant Engineering		
C423.1	Understand the working and efficiency calculations of steam power plant.	Understanding
C423.2	Understand the working & efficiency calculations of internal combustion and gas turbine power plants.	Understanding
C423.3	Analyze the working & efficiency calculations of hydro electric power plants.	Analyzing
C423.4	Explain the working & operations on nuclear power plants.	Analyzing
C423.5	Discuss the working & operations of combined power plants and power plants instrumentation & control	Understanding
C423.6	Analyze the power plant economics & environmental considerations	Analyzing

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Course Name: C424 Non Destructive Evaluation		
C424.1	Obtain knowledge on the source of light and electromagnetic rays like x-rays and gamma rays also usage of radiography in industries.	Applying
C424.2	Define principles of wave propagation and working of ultrasonic testing.	Remembering
C424.3	Gain knowledge on liquid Penetration testing on materials or welded parts.	Understanding
C424.4	Describe principles and procedure of magnetic testing, Standardization and Calibration, Interpretation and Evaluation.	Applying
C424.5	Identify defects in the work piece or weld joint using eddy current testing.	Remembering
C424.6	Compare NDE techniques and its application in industries.	Understanding

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Course Outcomes Summary **A.Y:2018-2019**

Year / Sem: IV / II

At the end of the course student will be able to

Course Name: C425 Project		**BT LEVEL**
C425.1	Identify a topic in advanced areas of Mechanical Engineering	Understanding
C425.2	Review literature to identify gaps and define objectives & scope of the work.	Understanding
C425.3	Develop a prototypes/models, experimental set-up and software systems necessary to meet the objectives.	Creating
C425.4	Analyze and discuss the results to draw valid conclusions.	Analyzing
C425.5	Prepare a report as per recommended format and defend the work.	Understanding
C425.6	Understand advanced technological solutions to engineering problems.	Understanding

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