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College Code : 35

Department of Mechanical Engineering

B.TECH - MECHANICAL ENGINEERING		
COURSE OUTCOMES FOR FIRST YEAR FIRST SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Engineering Physics R231108	CO-1	To analyze the intensity variation of light due to polarization, interference and diffraction.
	CO-2	To familiarize with the basics of crystals and their structures.
	CO-3	To explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.
	CO-4	To summarize various types of polarization of dielectrics and classify the magnetic materials.
	CO-5	To explain the basic concepts of Quantum Mechanics and the band theory of solids.
	CO-6	To identify the type of semiconductor using Hall effect.
Linear Algebra & Calculus R231105	CO-1	To develop and use of matrix algebra techniques that are needed by engineers for practical applications.
	CO-2	To utilize mean value theorems to real life problems.
	CO-3	To familiarize with functions of several variables which are useful in optimization.
	CO-4	To learn important tools of calculus in higher dimensions.
	CO-5	To familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.
Basic Electrical & Electronics Engineering R231109	CO-1	To describe fundamental laws, operating principles of motors/generators, MC/MI instruments (L2)
	CO-2	To demonstrate the working of electrical machines, measuring instruments and power generation stations. (L2)
	CO-3	To apply mathematical tools and fundamental concepts to derive various equations related to electrical circuits and machines. (L3)
	CO-4	To calculate electrical load and electricity bill of residential and commercial buildings. (L4)
Engineering Graphics R231110	CO-1	To understand the principles of engineering drawing, including engineering curves, scales, orthographic and isometric projections.
	CO-2	To draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views.
	CO-3	To understand and draw projection of solids in various positions in first quadrant.
	CO-4	To explain principles behind development of surfaces.

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	CO-5	To prepare isometric and perspective sections of simple solids.
Introduction to Programming R231107	CO-1	To understand basics of computers, the concept of algorithm and algorithmic thinking.
	CO-2	To analyse a problem and develop an algorithm to solve it.
	CO-3	To implement various algorithms using the C programming language.
	CO-4	To understand more advanced features of C language.
	CO-5	To develop problem-solving skills and the ability to debug and optimize the code.
IT Workshop R231108L	CO-1	To perform Hardware troubleshooting.
	CO-2	To understand Hardware components and inter dependencies.
	CO-3	To safeguard computer systems from viruses/worms.
	CO-4	To prepare document/ presentation.
	CO-5	To perform calculations using spreadsheets.
Engineering Physics Lab R231109L	CO-1	To operate optical instruments like travelling microscope and spectrometer.
	CO-2	To estimate the wavelengths of different colours using diffraction grating.
	CO-3	To plot the intensity of the magnetic field of circular coil carrying current with distance.
	CO-4	To evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively.
	CO-5	To calculate the band gap of a given semiconductor.
	CO-6	To identify the type of semiconductor using Hall effect.
Electrical & Electronics Engineering Workshop R231110L	CO-1	To measure voltage, current and power in an electrical circuit. (L3)
	CO-2	To measure of Resistance using Wheat stone bridge (L4)
	CO-3	To discover critical field resistance and critical speed of DC shunt generators. (L4)
	CO-4	To investigate the effect of reactive power and power factor in electrical loads. (L5)
Computer Programming Lab R231106L	CO-1	To read, understand, and trace the execution of programs written in C language.
	CO-2	To select the right control structure for solving the problem.
	CO-3	To develop C programs which utilize memory efficiently using programming constructs like pointers.
	CO-4	To develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.
NSS/NCC/Scouts & Guides/Community Service R231111L	CO-1	To understand the importance of discipline, character and service motto.
	CO-2	To solve some societal issues by applying acquired knowledge, facts, and techniques.
	CO-3	To explore human relationships by analyzing social problems.



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	CO-4	To determine to extend their help for the fellow beings and downtrodden people.
	CO-5	To develop leadership skills and civic responsibilities.

COURSE OUTCOMES FOR FIRST YEAR SECOND SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
Communicative English R231207	CO-1	To understand the context, topic, and pieces of specific information from social or Transactional dialogues.
	CO-2	To apply grammatical structures to formulate sentences and correct word forms.
	CO-3	To analyze discourse markers to speak clearly on a specific topic in informal discussions.
	CO-4	To evaluate reading / listening texts and to write summaries based on global comprehension of these texts.
	CO-5	To create a coherent paragraph, essay, and resume.
Engineering Chemistry R231208	CO-1	To demonstrate the corrosion prevention methods and factors affecting corrosion.
	CO-2	To explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers & conducting polymers.
	CO-3	To explain calorific values, octane number, refining of petroleum and cracking of oils.
	CO-4	To explain the setting and hardening of cement.
	CO-5	To summarize the concepts of colloids, micelle and nanomaterials.
Differential Equations & Vector Calculus R231202	CO-1	To solve the differential equations related to various engineering fields.
	CO-2	To identify solution methods for partial differential equations that model physical processes.
	CO-3	To interpret the physical meaning of different operators such as gradient, curl and divergence.
	CO-4	To estimate the work done against a field, circulation and flux using vector calculus.
Basic Civil & Mechanical Engineering R231211	CO-1	To understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society.
	CO-2	To know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.
	CO-3	To realize the importance of Transportation in nation's economy and

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		the engineering measures related to Transportation.
	CO-4	To understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated.
	CO-6	To understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.
	CO-7	To understand the different manufacturing processes.
	CO-8	To explain the basics of thermal engineering and its applications.
	CO-9	To describe the working of different mechanical power transmission systems and power plants.
	CO-10	To describe the basics of robotics and its applications.
Engineering Mechanics R231212	CO-1	To understand the fundamental concepts in mechanics and determine the frictional forces for bodies in contact.
	CO-2	To analyze different force systems such as concurrent, coplanar and spatial systems and calculate their resultant forces and moments.
	CO-3	To calculate the centroids, center of gravity and moment of inertia of different geometrical shapes.
	CO-4	To apply the principles of work-energy and impulse-momentum to solve the problems of rectilinear and curvilinear motion of a particle.
	CO-5	To solve the problems involving the translational and rotational motion of rigid bodies.
Communicative English Lab R231207L	CO-1	To understand the different aspects of the English language proficiency with emphasis on LSRW skills.
	CO-2	To apply communication skills through various language learning activities.
	CO-3	To analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
	CO-4	To evaluate and exhibit professionalism in participating in debates and group discussions.
	CO-5	To create effective Course Objectives
Engineering Chemistry Lab R231208L	CO-1	To determine the cell constant and conductance of solutions.
	CO-2	To prepare advanced polymer materials.
	CO-3	To determine the physical properties like surface tension, adsorption and viscosity.
	CO-4	To estimate the Iron and Calcium in cement.
	CO-5	To calculate the hardness of water.
Engineering Workshop R231211L	CO-1	To identify workshop tools and their operational capabilities.
	CO-2	To practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding.
	CO-3	To apply fitting operations in various applications.
	CO-4	To apply basic electrical engineering knowledge for House Wiring Practice.
Engineering Mechanics	CO-1	To evaluate the coefficient of friction between two different surfaces

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Lab R231212L		and between the inclined plane and the roller.
	CO-2	To verify Law of Polygon of forces and Law of Moment using force polygon and bell crank lever.
	CO-3	To determine the Centre of gravity and Moment of Inertia of different configurations.
	CO-4	To verify the equilibrium conditions of a rigid body under the action of different force systems.
Health and wellness, Yoga and Sports	CO-1	To understand the importance of yoga and sports for Physical fitness and sound health.
	CO-2	To demonstrate an understanding of health-related fitness components.
R231215L	CO-3	To compare and contrast various activities that help enhance their health.
	CO-4	To assess current personal fitness levels.
	CO-5	To develop Positive Personality

COURSE OUTCOMES FOR SECOND YEAR FIRST SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
Numerical Methods and Transform Techniques	CO-1	To evaluate the approximate roots of polynomial and transcendental equations by different algorithms. Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
	CO-2	To apply numerical integral techniques to different Engineering problems. Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations (L3)
	CO-3	To apply the Laplace transform for solving differential equations (L3)
	CO-4	To find or compute the Fourier series of periodic signals (L3)
	CO-5	To know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
Universal Human Values– Understanding Harmony & Ethical Human Conduct	CO-1	To define the terms like Natural Acceptance, Happiness and Prosperity (L1, L2)
	CO-2	To identify one's self, and one's surroundings (family, society nature) (L1, L2)
	CO-3	To apply what they have learnt to their own self in different day-to-day settings in real life (L3)
	CO-4	To relate human values with human relationship and human society.

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		(L4)
	CO-5	To justify the need for universal human values and harmonious existence (L5)
	CO-6	To develop as socially and ecologically responsible engineers (L3, L6)
Thermo dynamics	CO-1	To explain the importance of thermodynamic properties related to conversion of heat energy into work.L3
	CO-2	To apply the Zeroeth and First Law of Thermodynamics. L3
	CO-3	To understand Second Law of Thermodynamics. L2
	CO-4	To analyze the Mollier charts, T-S and h-s diagrams, Steam calorimetry, Phase Transformations L4
	CO-5	To evaluate the COP of refrigerating systems and properties, processes of psychrometry and sensible and latent heat loads. L5
Mechanics of Solids	CO-1	To learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components L1
	CO-2	To analyse beams and draw correct and complete shear and bending moment diagrams for beams. L4
	CO-3	To apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, and moments. L3
	CO-4	To model & Analyze the behavior of basic structural members subjected to various loads L4
	CO-5	To design and analysis of Industrial components like pressure vessels. L6
Material Science and Metallurgy	CO-1	To understand the crystalline structure of different metals and study the stability of phases in different alloy systems. L2
	CO-2	To study the behavior of ferrous and non-ferrous metals and alloys and their application in different domains. L1
	CO-3	To understand the effect of heat treatment, addition of alloying elements on properties of ferrous metals. L2
	CO-4	To grasp the methods of making of metal powders and applications of powder metallurgy. L3
	CO-5	To comprehend the properties and applications of ceramic, composites and other advanced methods. L4
Mechanics of Solids and Materials Science Lab	CO-1	To understand the stress strain behavior of different materials. L2
	CO-2	To evaluate the hardness of different materials. L4
	CO-3	To explain the relation between elastic constants and hardness of materials. L1
	CO-4	To identify various microstructures of steels and cast irons. L3
	CO-5	To evaluate hardness of treated and untreated steels. L4
Computer-aided Machine	CO-1	To demonstrate the conventional representations of materials and

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Drawing		machine components. L3
	CO-2	To model riveted, welded and key joints using CAD system. L6
	CO-3	To create solid models and sectional views of machine components. L6
	CO-4	To generate solid models of machine parts and assemble them. L5
	CO-5	To translate 3D assemblies into 2D drawings. L6
Python programming Lab	CO-1	To solve the different methods for linear, non-linear and differential equations
	CO-2	To learn the PYTHON Programming language
	CO-3	To familiar with the strings and matrices in PYTHON
	CO-4	To write the Program scripts and functions in PYTHON to solve the methods
Embedded Systems and IoT	CO-1	To comprehend Microcontroller-Transducers Interface techniques. L4
	CO-2	To establish Serial Communication link with Arduino L6
	CO-3	To analyse basics of SPI interface. L4
	CO-4	To understand the concept of M2M (machine to machine) with necessary protocols and get awareness in implementation of distance sensor. L2
	CO-5	To realize the revolution of internet in mobile devices, cloud and sensor networks L3
Environmental Science	CO-1	To grasp multi disciplinary nature of environmental studies and various renewable and non-renewable resources. L2
	CO-2	To understand flow and bio-geo- chemical cycles and ecological pyramids. L2
	CO-3	To understand various causes of pollution and solid waste management and related preventive measures. L2
	CO-4	To understand the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation. L2
	CO-5	To illustrate the causes of population explosion, value education and welfare programmes. L3

COURSE OUTCOMES FOR SECOND YEAR SECOND SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
Industrial Management	CO-1	To learn about how to design the optimal layout L1
	CO-2	To demonstrate work study methods L3
	CO-3	To explain Quality Control techniques L2
	CO-4	To discuss the financial management aspects and L2
	CO-5	To understand the human resource management methods. L2
Complex Variables, Probability and Statistics	CO-1	To apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic L3
	CO-2	To make use of the Cauchy residue theorem to evaluate certain

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		integrals L3
	CO-3	To Infer the statistical inferential methods based on small and large sampling tests L4
	CO-4	To find the differentiation and integration of complex functions used in engineering problems L5
	CO-5	To design the components of a classical hypothesis test L6
Manufacturing processes	CO-1	To design the patterns and core boxes for metal casting processes L6
	CO-2	To understand the different welding processes L2
	CO-3	To demonstrate the different types of bulk forming processes L3
	CO-4	To understand sheet metal forming processes L2
	CO-5	To learn about the different types of additive manufacturing processes L2
Fluid Mechanics & Hydraulic Machines	CO-1	To understand the basic concepts of fluid properties. L2
	CO-2	To estimate the mechanics of fluids in static and dynamic conditions. L5
	CO-3	To apply the Boundary layer theory, flow separation and dimensional analysis. L3
	CO-4	To estimate the hydro dynamic forces of jet on vanes indifferent positions. L5
	CO-5	To understand the working Principles and performance evaluation of hydraulic pump and turbines. L2
Theory of Machines	CO-1	To understand different mechanisms and their inversions. L2
	CO-2	To calculate velocity and acceleration of different links in a mechanism L4
	CO-3	To apply the effects of gyroscopic couple in ships, aero planes and road vehicles. L3
	CO-4	To evaluate unbalance mass in rotating machines. L5
	CO-5	To analyze free and forced vibrations of single degree freedom systems. L4
Fluid Mechanics & Hydraulic Machines Lab	CO-1	To demonstrate the devices used for measuring flow. L3
	CO-2	To compute major losses in pipes. L5
	CO-3	To illustrate the operating parameters of turbines. L2
	CO-4	To explain the working of different types of pumps. L2
	CO-5	To explain the devices used for measuring flow. L2
Manufacturing processes Lab	CO-1	To make moulds for sand casting. L2
	CO-2	To fabricate different types of components using various manufacturing techniques. L5
	CO-3	To adapt unconventional manufacturing methods. L3
	CO-4	To develop Different Weld joints. L6
	CO-5	To explain different types of 3d Printing techniques. L2
Soft Skills	CO-1	To assimilate and understood the meaning and importance of soft skills and learn how to develop them. L1

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	CO-2	To understand the significance of soft skills in the working environment for professional excellence. L2
	CO-3	To prepare to undergo the placement process with confidence and clarity. L3
	CO-4	To ready to face any situation in life and equip themselves to handle them effectively. L6
	CO-5	To understand and learn the importance of etiquette in both professional and personal life L2
Design Thinking & Innovation	CO-1	To define the concepts related to design thinking. L1
	CO-2	To explain the fundamentals of Design Thinking and innovation. L2
	CO-3	To apply the design thinking techniques for solving problems in various sectors. L3
	CO-4	To analyse to work in a multidisciplinary environment. L4
	CO-5	To evaluate the value of creativity. L5
COURSE OUTCOMES FOR THIRD YEAR FIRST SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Thermal engineering – II R2031031	CO-1	To explain the basic concepts of thermal engineering and boilers.
	CO-2	To discuss the concepts of steam nozzles and steam turbines.
	CO-3	To gain knowledge about the concepts of reaction turbine and steam condensers.
	CO-4	To discuss the concepts of reciprocating and rotary type of compressors.
	CO-5	To acquire knowledge about the centrifugal and axial flow compressors.
Design of Machine Members-I R2031032	CO-1	To judge about materials and their properties along with manufacturing considerations.
	CO-2	To gain knowledge about the strength of machine elements.
	CO-3	To apply the knowledge in designing the riveted and welded joints, keys, cotters and knuckle joints.
	CO-4	To apply the knowledge in designing the shafts and shaft couplings.
	CO-5	To apply the knowledge in designing the mechanical springs.
Machining, Machine Tools & Metrology R2031033	CO-1	To discuss the concepts of machining processes.
	CO-2	To apply the principles of lathe, shaping, slotting and planning machines.
	CO-3	To apply the principles of drilling, milling and boring processes.
	CO-4	To analyze the concepts of finishing processes and the system of limits and fits.
	CO-5	To learn the concepts of surface roughness and optical measuring instruments.
Sustainable Energy Technologies	CO-1	To explain the importance of solar energy collection and storage.
	CO-2	To apply the principles of wind energy and biomass energy.

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(Open Elective – 1) R203103G	CO-3	To analyze knowledge on geothermal and ocean energy.
	CO-4	To justify the knowledge about energy efficient systems.
	CO-5	To discuss the concepts of green manufacturing systems.
Industrial Robotics (Programme Elective -1) R203103B	CO-1	To perceive the concepts of robotics and its systems.
	CO-2	To apply knowledge about the motion analysis and manipulator kinematics.
	CO-3	To analyze the differential transformations.
	CO-4	To apply the basics about path description and generation.
	CO-5	To judge about the actuators, feedback components and robotic applications.
Machine Tools Lab R2031034	CO-1	To demonstrate about general purpose machine tools in the machine shop.
	CO-2	To perform various operations on lathe machine.
	CO-3	To perceive different operations on drilling machine.
	CO-4	To experiment with basic operations on shaping machine.
	CO-5	To utilize slotting machine to make keyways.
	CO-6	To experiment with the basic operations on milling machine.
Thermal Engineering Lab R2031035	CO-1	To experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
	CO-2	To perceive flash point, fire point, calorific value of different fuels using various apparatus.
	CO-3	To perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
	CO-4	To perform speed test, performance test and cooling temperature on petrol and diesel engines.
	CO-5	To utilize air compressor for its performance test and to determine efficiency.
	CO-6	To discuss the principles through assembly and disassembly of 2/3 wheelers, 2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.
Advanced Communication Skills Lab R2031036	CO-1	To acquire vocabulary and use it contextually
	CO-2	To listen and speak effectively
	CO-3	To develop proficiency in academic reading and writing
	CO-4	To increase possibilities of job prospects
	CO-5	To communicate confidently in formal and informal contexts
Professional Ethics And Human Values R2031037	CO-1	To judge the concepts of human values.
	CO-2	To justify knowledge about the principles of engineering ethics.
	CO-3	To interpret engineering as social experimentation.
	CO-4	To realize engineers' responsibility for safety and risk.
	CO-5	To learn about the engineers' rights and responsibilities.



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COURSE OUTCOMES FOR THIRD YEAR SECOND SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
Heat Transfer R2032031	CO-1	To apply knowledge about mechanism and modes of heat transfer.
	CO-2	To understand the concepts of conduction and convective heat transfer.
	CO-3	To learn about forced and free convection.
	CO-4	To analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.
	CO-5	To interpret the knowledge about radiation mode of heat transfer.
Design Of Machine Members-II R2032032	CO-1	To apply knowledge about the design of bearings.
	CO-2	To explain the concepts in designing various engine parts.
	CO-3	To utilize the knowledge to design curved beams and power screws.
	CO-4	To justify power transmission systems and to design pulleys and gear drives.
	CO-5	To apply the concepts in designing various machine tool elements.
Introduction To Artificial Intelligence & Machine Learning R2032033	CO-1	To discuss basic concepts of artificial intelligence, neural networks and genetic algorithms.
	CO-2	To apply the principles of knowledge representation and reasoning.
	CO-3	To learn about Bayesian and computational learning and machine learning.
	CO-4	To utilize various machine learning techniques.
	CO-5	To apply the machine learning analytics and deep learning techniques.
Automobile Engineering (PE-2) R203203A	CO-1	To discuss various components of four wheeler automobile.
	CO-2	To apply the knowledge of different parts of transmission system.
	CO-3	To judge about steering and suspension systems.
	CO-4	To justify the braking system and electrical system used in automobiles.
	CO-5	To analyze the concepts about engine specifications and service, safety and electronic system used in automobiles.
Advanced Materials (Open Elective-2) R203203I	CO-1	To explain the metals and alloys and their utility in different environments.
	CO-2	To learn about polymers and ceramics and their applications.
	CO-3	To analyze composite materials along with reinforcements and their applications.
	CO-4	To apply the basics of shape memory alloys and functionally graded

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		materials.
	CO-5	To analyze the knowledge about the nanomaterials and their applications.
Heat Transfer Lab R2032034	CO-1	To determine the heat transfer rate and coefficient.
	CO-2	To determine the thermal conductivity, efficiency and effectiveness.
	CO-3	To determine the emissivity and Stefan-Boltzman constant.
	CO-4	To determine critical heat flux and investigate Lambert's cosine law.
	CO-5	To experiment with Virtual labs and analyse conduction, HT coefficient.
	CO-6	To experiment with Virtual labs and investigate Lambert's laws.
CAE & CAM Lab R2032035	CO-1	To experiment with trusses and beams to determine stress, deflection, natural frequencies, harmonic analysis, HT analysis and buckling analysis.
	CO-2	To create part programmes using FANUC controller.
	CO-3	To apply G-codes for automated tool path using CAM software.
	CO-4	To analyze about rapid prototyping machine and to print simple parts.
	CO-5	To experiment with virtual 3D printing simulation using Vlabs.
Measurements & Metrology lab R2032036	CO-1	To demonstrate the calibration experiments with different gauges, transducers, thermocouple and temperature detector.
	CO-2	To demonstrate the calibration experiments with rotameter, seismic apparatus.
	CO-3	To demonstrate the calibration experiments with vernier calipers, micrometer, height and dial gauges.
	CO-4	To analyze various machine tools for their alignment.
	CO-5	To measure angular and taper measurements, straightness, surface roughness.
Artificial Intelligence and Machine Learning Lab R2032037	CO	At the end of the course, student will be able to apply the knowledge of artificial intelligence and machine learning models along with image classifiers and automatic facial recognition using various software tools.
Research Methodology and IPR R2032038	CO-1	To understand objectives and characteristics of a research problem
	CO-2	To analyze research related information and to follow research ethics.
	CO-3	To understand the types of intellectual property rights.
	CO-4	To learn about the scope of IPR.
	CO-5	To understand the new developments in IPR.

COURSE OUTCOMES FOR FOURTH YEAR FIRST SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
Unconventional Machining Processes (Programme Elective-3)	CO-1	To understand the concepts of modern machining processes.
	CO-2	To learn the principles of ultrasonic machining.
	CO-3	To apply the principles and procedure of electro chemical and

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College Code : 35

R204103C		chemical machining processes.
	CO-4	To apply the principles and procedure of thermal metal removal processes.
	CO-5	To illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.
Power Plant Engineering (Programme Elective - 4) R204103H	CO-1	To identify the different components of the steam power plant for power production.
	CO-2	To illustrate the component used in the diesel and gas power plant for power production
	CO-3	To understand how the power is produced by hydro-electric and nuclear power plants
	CO-4	To interpret the power production by combined power plants and operating principles of different instruments used in power plants.
	CO-5	To analyze power plant economics and implementation of pollution standards and control of pollution caused by the power plants.
Non Destructive Evaluation (Programme Elective -5) R204103Q	CO-1	To understand the concepts of various NDE techniques and the requirements of radiography techniques and safety aspects.
	CO-2	To interpret the principles and procedure of ultrasonic testing (BL-2).
	CO-3	To understand the principles and procedure of Liquid penetration and eddy current testing.
	CO-4	To illustrate the principles and procedure of Magnetic particle testing.
	CO-5	To interpret the principles and procedure of infrared testing and thermal testing.
Environmental Management (Open elective - 3) R204101R	CO-1	To plan and design the water and wastewater systems
	CO-2	To identify the source of emissions and select proper control systems.
	CO-3	To design & estimation of water supply system for a city
	CO-4	To get knowledge about various environmental aspects
	CO-5	To Select suitable treatment flow for raw water treatments
Disaster Management (Open Elective - 4) R204101V	CO-1	To affirm the usefulness of integrating management principles in disaster mitigation work
	CO-2	To distinguish between the different approaches needed to manage pre- during and post- disaster periods
	CO-3	To explain the process of risk management
	CO-4	To relate to risk transfer
Universal Human Values: Understanding Harmony R2041011	CO-1	To understand and analyse the essentials of human values and skills, self exploration, happiness and prosperity.
	CO-2	To evaluate coexistence of the "I" with the body.
	CO-3	To identify and evaluate the role of harmony in family, society and universal order.
	CO-4	To understand and associate the holistic perception of harmony at all levels of existence.
	CO-5	To develop appropriate technologies and management patterns to create harmony in professional and personal lives.

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Mechatronics Lab R204103Y	CO-1	To understand the Characteristics of LVDT
	CO-2	To measure load, displacement and temperature using analogue and digital sensors.
	CO-3	To develop PLC programs for control of traffic lights, water level, lifts and conveyor belts.
	CO-4	To simulate and analyze PID controllers for a physical system using MATLAB.
	CO-5	To develop pneumatic and hydraulic circuits using Automaton studio.