Civil Engineering

YEAR	SEMESTER	SUBJECT	COS
I/IV (R20)	**I**	**ENGINEERING DRAWING**	• Creating to draw the polygons, engineering curves, and scales. • Creating the projections of lines inclined to both the planes and its traces. • Understanding the different plans and draw the projections of the plane inclined to both the planes. • Analyzing the basic solids and draw the projections of the solids inclined to one of the planes. • Creating to represent and convert the isometric view to orthographic view and orthographic view to isometric view.
		ENGINEERING PHYSICS	• Able to know the differences between interference, diffraction and polarization with its Engineering applications. • Able to understand the concepts of LASER and optical fibers. Apply these concepts in various Engineering and medical fields. • Able to apply the concepts of dielectric and magnetic materials in emerging micro devices. • Able to identify acoustic properties of materials in architecture and use of Ultrasonics in different fields • Able to apply the knowledge of crystal diffraction methods to measure the various properties of crystals.
		ENGINEERING GEOLOGY	• Able to identify and classify the geological minerals • Able to measure the rock strengths of various rocks • Able to classify, monitor and measure the Landslides and earthquake prone areas to practice the hazard zonation • Able to analyses the ground conditions

			through geophysical surveys. • Able to investigate the geological material and ground to check the suitability of civil engineering project construction for mega/mini civil engineering projects. Site selection for mega engineering projects like Dams, Tunnels, disposal sites etc.
		COMMUNICATIVE ENGLISH	• Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers • Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials • Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems. • Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. • Able to solve the higher order differential equations related to various engineering fields. • Able to use functions of several variables in optimization. • Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
II/IV (R20)	**I**	**MATHEMATICS-III**	• interpret the physical meaning of different operators such as gradient, curl and divergence (L5) • estimate the work done against a field, circulation and flux using vector calculus

			(L5)
			• apply the Laplace transform for solving differential equations (L3)
			• find or compute the Fourier series of periodic signals (L3)
			• know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
			• identify solution methods for partial differential equations that model physical processes (L3)
II	I	**STRENGTH OF MATERIALS - I**	• The student will be able to understand the basic materials behavior under the influence of different external loading conditions and the support conditions • The student will be able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces • The student will have knowledge of bending concepts and calculation of section modulus and for determination of stresses developed in the beams and deflections due to various loading conditions • The student will be able to assess stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation.
II	I	**FLUID MECHANICS**	• Understand the various properties of fluids and their influence on fluid motion

			and analyse a variety of problems in fluid statics and dynamics.
			• Calculate the forces that act on submerged planes and curves.
			• Ability to analyse various types of fluid flows.
			• Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts in order to predict relevant pressures, velocities and forces.
			• Able Measure the quantities of fluid flowing in pipes, tanks and channels.
II	I	**SURVEYING AND GEOMETRICS**	• Apply the knowledge to calculate angles, distances and levels
			• Identify data collection methods and prepare field notes
			• Understand the working principles of survey instruments, measurement errors and corrective measures
			• Interpret survey data and compute areas and volumes, levels by different type of equipment and relate the knowledge to the modern equipment and methodologies
II	I	**HIGHWAY ENGINEERING**	• Plan highway network for a given area.
			• Determine Highway alignment and design highway geometrics.
			• Design Intersections and prepare traffic management plans
			• Judge suitability of pavement materials
			• design flexible and rigid pavements
III/IV (R19)	I	**STRUCTURAL ANALYSIS**	• Distinguish between the determinate and indeterminate structures.

			• Identify the behaviour of structures due to the expected loads, including the moving loads, acting on the structure. • Estimate the bending moment and shear forces in beams for different fixity conditions. • Analyze the continuous beams using various methods -, three moment method, slope deflection method, energy theorems. • Draw the influence line diagrams for various types of moving loads on beams/bridges. • Analyze the loads in Pratt and Warren trusses when loads of different types and spans are passing over the truss
III	I	**CONCRETE TECHNOLOGY**	• understand basic concepts of concrete. • realize importance of quality ofconcrete. • familiarize basic ingredients of concrete and their role in concrete and their behaviour in the field. • test fresh concrete properties and hardened concrete properties. • evaluate ingredients of concrete through lab tests. design concrete mix by IS method. • familiarize basic concepts of special concrete and their production and applications. understand the behaviour of concrete in various environments.
III	I	**WATER RESOURCES ENGINEERING - I**	• be able to quantify major hydrologic components and apply key concepts to several practical areas of engineering

			hydrology and related design aspects
			• develop Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures.
			• ability to develop design storms and carry out frequency analysis
			• be able to determine storage capacity and life of reservoirs and develop unit hydrograph and synthetic hydrograph.
			• be able to estimate flood magnitude and carry out flood routing.
			• be able to determine aquifer parameters and yield of wells.
			• Ability to develop the hydrological models.
III	**I**	**ENVIRONMENTAL ENGINEERING - II**	• Plan and design the sewerage systems by estimating the flow
			• Design of Plumbing for an apartment, Gated community or Hotels or Individual houses and Select the appropriate appurtenances in the sewerage systems
			• Estimation of BOD and COD and Suggest a suitable disposal method with respect to effluent standards, and Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
			• Analyze sewage and design suitable treatment system for sewage treatment for a village/City.
			• Design of sewage treatment systems like Septic tank soak pit system and FAB reactor for buildings and understanding tertiary treatment of sewage.

III	I	CONSTRUCTION TECHNOLOGY & MANAGEMENT	• appreciate the importance of construction planning • understand the functioning of various earth moving equipment • know the methods of production of aggregate products and concreting and usage of machinery required for the works. • apply the gained knowledge to project management and construction techniques
III	I	ENVIRONMENTAL POLLUTION & CONTROL	• Identify the air pollutant control devices • Have knowledge on the NAAQ standards and air emission standards • Differentiate the treatment techniques used for sewage and industrial wastewater treatment methods. • Understand the fundamentals of solid waste management, practices adopted in his town/village and its importance in keeping the health of the city. • Appreciate the methods of environmental sanitation and the management of community facilities without spread of epidemics. • Appreciate the importance of sustainable development while planning a project or executing an activity.
IV/IV (R16)	I	ENVIRONMENTAL ENGINEERING -II	• Plan and design the sewerage systems • Select the appropriate appurtenances in the sewerage systems • Analyze sewage and suggest and design suitable treatment system for sewage treatment

			• Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river • Suggest a suitable disposal method with respect to effluent standards.
IV	I	**WATER RESOURCES ENGINEERING–II**	• estimate irrigation water requirements • design irrigation canals and canal network • plan an irrigation system • design irrigation canal structures • plan and design diversion head works • analyse stability of gravity and earth dams • design ogee spillways and energy dissipation works
IV	I	**GEOTECHNICAL ENGINEERING – II**	• The student must be able to understand the various types of shallow foundations and decide on their location based on soil characteristics. • The student must be able to compute the magnitude of foundation settlement to decide the size of the foundation. • The student must be able to use the field test data and arrive at the bearing capacity. • The student must be able to design Piles based on the principles of bearing capacity.
IV	I	**REMOTE SENSING AND GIS APPLICATIONS**	• be familiar with ground, air and satellite based sensor platforms. • interpret the aerial photographs and satellite imageries • create and input spatial data for GIS application • apply RS and GIS concepts in water resources engineering • applications of various satellite data

IV	I	GROUND IMPROVEMENT TECHNIQUES	• By the end of the course, the student should be able to possess the knowledge of various methods of ground improvement and their suitability to different field situations. • The student should be in a position to design a reinforced earth embankment and check its stability. • The student should know the various functions of Geosynthetics and their applications in Civil Engineering practice. • The student should be able to understand the concepts and applications of grouting.
IV	I	GROUND WATER DEVELOPMENT	• estimate aquifer parameters and yield of wells • analyse radial flow towards wells in confined and unconfined aquifers. • design wells and understand the construction practices. • interpret geophysical exploration data for scientific source finding of aquifers. • determine the process of artificial recharge for increasing groundwater potential. • take effective measures for controlling saline water intrusion. • apply appropriate measures for groundwater management.

Electrical and Electronics Engineering

YEAR	SEMESTER	SUBJECT	COS
I/IV **(R20)**	**I**	**ENGINEERING DRAWING**	- Creating to draw the polygons, engineering curves, and scales. - Creating the projections of lines inclined to both the planes and its traces. - Understanding the different plans and draw the projections of the plane inclined to both the planes. - Analyzing the basic solids and draw the projections of the solids inclined to one of the planes. - Creating to represent and convert the isometric view to orthographic view and orthographic view to isometric view.
		COMMUNICATIVE ENGLISH	- Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers - Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials - Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations - Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information - Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS -I	- Able to apply mean value theorems to engineering problems. - Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. - Able to solve the higher order differential equations related to various engineering fields. - Able to use functions of several variables in optimization. - Able to apply the tools of calculus for calculating the areas and volumes using

			multiple integrals.
		MATHEMATICS -II	• Able to solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel • Able to develop the use of matrix algebra techniques that is needed by engineers for practical applications • Able to evaluate approximating the roots of polynomial and transcendental equations by different algorithms. • Able to apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals. • Able to apply different algorithms for approximating the solutions of ordinary differential equations to its analytical computations
		PROGRAMMING FOR PROBLEM SOLVING USING C	• Understanding basic building blocks of C-programming language. • Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem • Demonstrate the use of different derived data types, Strings, structures and unions • Design and implement programs to analyze the different pointer applications • Explain various file handling mechanisms & Apply File I/O operations.
II/IV (R20)	**I**	**MATHEMATICS -IV**	• Able to apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic • Able to find the differentiation and integration of complex functions used in engineering problems and to make use of the Cauchy residue theorem to evaluate certain integrals • Able to apply discrete and continuous probability distributions • Able to the components of a classical

			hypothesis test
			• Able to infer the statistical inferential methods based on small and large sampling tests
		ELECTRONIC DEVICES AND CIRCUITS	• Able to Understand the basic concepts of semiconductor physics. • Able to Understand the formation of P-N junction and how it can be used as a P-N junction as diode in different modes of operation. • Able to know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons • Able to Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations. • Able to know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions, Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations.
		ELECTRICAL CIRCUIT ANALYSIS – II	• Able to understand the concepts of balanced and unbalanced three-phase circuits. • Able to know the transient behaviour of electrical networks with DC excitations. • Able to learn the transient behaviour of electrical networks with AC excitations. • Able to Estimate various parameters of a two port network. • Able to understand the significance of filters in electrical networks.
		DC MACHINES AND TRANSFORMERS	• Assimilate the concepts of electromechanical energy conversion. • Mitigate the ill-effects of armature reaction and improve commutation in dc machines. • Understand the torque production mechanism and control the speed of dc

				motors, Able to analyze the performance of single phase transformers
				• Predetermine regulation, losses and efficiency of single phase transformers
				• Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.
			ELECTRO MAGNETIC FIELDS	• Able to Compute electric fields and potentials using Gauss law or solve Laplace's or Poisson's equations for various electric charge distributions.
				• Able to calculate the capacitance and energy stored in dielectrics.
				• Able to calculate the magnetic field intensity due to current carrying conductor and understanding the application of Ampere's law, Maxwell's second and third law.
				• Estimate self and mutual inductances and the energy stored in the magnetic field.
				• Able to Understand the concepts of displacement current and Poynting theorem and Poynting vector
III/IV (R19)	**I**		**PYTHON PROGRAMMING**	• Develop essential programming skills in computer programming concepts like data types containers.
				• Apply the basics of programming in the Python language Solve coding tasks related
				• conditional execution, loops
				• Solve coding tasks related to the fundamental notions and techniques used in object- oriented programming
			DIGITAL ELECTRONICS	• Classify different number systems and apply to generate various codes.
				• Use the concept of Boolean algebra in minimization of switching functions
				• Design different types of combinational logic circuits.
				• Apply knowledge of flip-flops in designing of Registers and counters
				• The operation and design methodology for

			synchronous sequential circuits and algorithmic state machines.
		POWER SYSTEMS-1	• Identify the different components of thermal power plants. • Identify the different components of nuclear Power plants. • Identify the different components of air and gas insulated substations. • Identify single core and three core cables with different insulating materials • Analyse the different economic factors of power generation and tariffs
		INDUCTION AND SYNCHRONOUS MACHINES	• Explain the operation and performance of three phase induction motor. • Analyze the torque-speed relation, performance of induction motor and induction generator • Implement the starting of single phase induction motors. • Develop winding design and predetermine the regulation of synchronous generators. • Explain hunting phenomenon implement methods of staring and correction of power factor with synchronous motor.
		MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS	• The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product. • The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs. • The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units. • The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis. • The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making

IV	I	Energy Audit, Conservation & Management (Open Elective)	• Explain energy efficiency, conservation and various technologies. • Design energy efficient lighting systems. • Calculate power factor of systems and propose suitable compensation techniques. • Explain energy conservation in HVAC systems. • Calculate life cycle costing analysis and return on investment on energy efficient technologies.
		Utilization Of Electrical Energy	• Able to identify a suitable motor for electric drives and industrial applications • Able to identify most appropriate heating or welding techniques for suitable applications. • Able to understand various level of illuminosity produced by different illuminating sources. • Able to estimate the illumination levels produced by various sources and recommend the most efficient illuminating sources and should be able to design different lighting systems by taking inputs and constraints in view. • Able to determine the speed/time characteristics of different types of traction motors. • Able to estimate energy consumption levels at various modes of operation.
		Linear IC Applications	• Design circuits using operational amplifiers for various applications. Analyze and design amplifiers and active filters using Op-amp. • Diagnose and trouble-shoot linear electronic circuits. • Understand the gain-bandwidth concept and frequency response of the amplifier configurations. • Understand thoroughly the operational amplifiers with linear integrated circuits. • Loop and its applications. • Understand D/a and A/D conversions **by using IC's.**
		Power System Operation And Control	• Able to compute optimal scheduling of Generators. • Able to understand hydrothermal scheduling. • Understand the unit commitment

			problem.
			• Able to understand importance of the frequency.
			• Understand importance of PID controllers in single area and two area systems.
			• Will understand reactive power control and compensation for transmission line.
		Switchgear And Protection	• Able to understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, SF6 gas type.
			• Ability to understand the working principle and operation of different types of electromagnetic protective relays.
			• Students acquire knowledge of faults and protective schemes for high power generator and transformers.
			• Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.
			• Able to understand different types of static relays and their applications.
			• Able to understand different types of over voltages and protective schemes required for insulation co–ordination.
		Electrical Machine Modeling & Analysis (Elective-I)	• Develop modeling of dc machine
			• Apply mathematical modeling concepts to 3-phase Induction machines
			• Design control strategies based on dynamic modeling of 3-ph Induction machines and 3-phase synchronous machine.
			• Analyze BLDC Machine and switched reluctance machine based on mathematical modeling of BLDCM and SRM.
		Advanced Control Systems	• State space representation of control system and formulation of different state models are reviewed.
			• Able to design of control system using the pole placement technique is given after introducing the concept of controllability and observability.
			• Able to analyse of nonlinear system using the describing function technique and phase plane analysis.
			• Able to analysethe stability analysis using lypnov method.

			- Minimization of functionals using calculus of variation studied. - Able to formulate andsolve the LQR problem and riccatti equation.
		Progammable Logic Controllers & Applications	- Understand the PLCs and their I/O modules. - Develop control algorithms to PLC using ladder logic. - Manage PLC registers for effective utilization in different applications. - Design PID controller with PLC.
		Instrumentation (Elective – I)	- Able to represent various types of signals - Acquire proper knowledge to use various types of Transducers. - Able to monitor and measure various parameters such as strain, velocity, temperature, pressure etc. - Acquire proper knowledge and working principle of various types of digital voltmeters. - Able to measure various parameter like phase and frequency of a signal with the help of CRO. - Acquire proper knowledge and able to handle various types of signal analyzers.
		Electric Power Quality	- Differentiate between different types of power quality problems. - Explain the sources of voltage sag, voltage swell, interruptions, transients, long duration over voltages and harmonics in a power system. - Analyze power quality terms and power quality standards. - Explain the principle of voltage regulation and power factor improvement methods. - Demonstrate the relationship between distributed generation and power quality. - Explain the power quality monitoring concepts and the usage of measuring instruments.

MECHANICAL ENGINEERING

YEAR	SEMESTER	SUBJECT	COURSE OUTCOMES
I/IV (R20)	I	ENGINEERING DRAWING	• Creating to draw the polygons, engineering curves, and scales. • Creating the projections of lines inclined to both the planes and its traces. • Understanding the different plans and draw the projections of the plane inclined to both the planes. • Analyzing the basic solids and draw the projections of the solids inclined to one of the planes. • Creating to represent and convert the isometric view to orthographic view and orthographic view to isometric view.
		ENGINEERING PHYSICS	• Able to know the differences between interference, diffraction and polarization with its Engineering applications. • Able to understand the concepts of LASER and optical fibers. Apply these concepts in various Engineering and medical fields. • Able to apply the concepts of dielectric and magnetic materials in emerging micro devices. • Able to identify acoustic properties of materials in architecture and use of Ultrasonics in different fields • Able to apply the knowledge of crystal diffraction methods to measure the various properties of crystals.
		COMMUNICATIVE ENGLISH	• Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers • Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials • Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same

			in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems. • Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. • Able to solve the higher order differential equations related to various engineering fields. • Able to use functions of several variables in optimization. • Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
		PROGRAMMING FOR PROBLEM SOLVING USING C	• Understanding basic building blocks of C-programming language. • Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem • Demonstrate the use of different derived data types, Strings, structures and unions • Design and implement programs to analyze the different pointer applications • Explain various file handling mechanisms & Apply File I/O operations.
II (R20)	**I**	**Vector Calculus, Fourier Transforms And Pde(M-III)**	• Interpret the physical meaning of different operators such as gradient, curl and divergence. • Estimate the work done against a field, circulation and flux using vector calculus. • Apply the Laplace transform for solving differential equations.

			- Find or compute the Fourier series of periodic signals. - Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms. - Identify solution methods for partial differential equations that model physical processes.
		Mechanics Of Solids	- Student will model & analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium. - Able to understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment. - Students will 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. Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams. - Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior. - Student can design and analysis of Industrial components likes pressure vessels.
		Fluid Mechanics & Hydraulic Machines	- The basic concepts of fluid properties. - The mechanics of fluids in static and dynamic conditions. - Boundary layer theory, flow separation and dimensional analysis. - Hydrodynamic forces of jet on vanes in different positions. - Working Principles and performance evaluation of hydraulic pump and

			turbines.
		Production Technology	- Able to design the patterns and core boxes for metal casting processes - Able to design the gating system for different metallic components - Know the different types of manufacturing processes - Be able to use forging, extrusion processes - Learn about the different types of welding processes used for special fabrication.
		Kinematics Of Machinery	- Contrive a mechanism for a given plane motion with single degree of freedom. - Suggest and analyze a mechanism for a given straight line motion and automobile steering motion. - Analyze the motion (velocity and acceleration) of a plane mechanism. - Suggest and analyze mechanisms for a prescribed intermittent motion like opening and closing of IC engine valves etc. - Select a power transmission system for a given application and analyze motion of different transmission systems
III/IV (R19)	**I**	**Dynamics Of Machinery**	- To compute the frictional losses and transmission in clutches, brakes and dynamometers - To determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes - To analyze the forces in four bar and slider crank mechanisms and design a flywheel - To determine the rotary unbalanced mass in reciprocating equipment - To determine the unbalanced forces and couples in reciprocating and radial engines - To determine the natural frequencies of discrete systems undergoing longitudinal, torsional and transverse vibrations.
		Design Of Machine Members-II	- Students will able to Select the suitable bearing based on the application of the loads and predict the life of the bearing. - Able to design the ic engine parts - Design of power transmission elements

			such as gears, belts, chains, pulleys, ropes, levers and power screws.
			• Design spur & helical gear for different engineering applications.
			• Able to design the levers and brackests , wire ropes and curved beams
		Mechanical Measurements & Metrology	• Students will be able to describe the construction and working principles of measuring instruments for measurement of displacement and speed and select appropriate instrument for a given application.
			• Students will be able to describe the construction and working principles of measuring instruments for strain, force, Torque, power, acceleration and Vibration and select appropriate instrument for a given application.
			• Students will be able to explain shaft basis system and hole basis systems for fits and represent tolerances for a given fit as per the shaft basis system and hole basis system and design limit gauges based on the tolerances for quality check in mass production.
			• Students will be able to explain methods for linear, angle and flatness measurements and select a suitable method and its relevant instrument for a given application.
			• Students will be able to measure the threads, gear tooth profiles, surface roughness and flatness using appropriate instruments and analyze the data.
		Managerial Economics And Financial Accountancy	• Able to know Basic Economic Concepts and Demand Concepts.
			• Able to understand the Production Function and Break-Even Analysis
			• Able to gain Knowledge about Market, Competition and Pricing.
			• Able to be aware of Types of Business Organizations and Phases of Business Cycle.

			• Able to put on Accounting Process and Applications of Ratio's. • Able to conscious about Methods of Capital Budgeting.
		IC Engines & Gas Turbines	• Students will be able to Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications. • Students will be able to Explain working principle and various components of IC engine • Students will be able to Explain combustion phenomenon of CI and SI engines and their impact on engine variables. • Students will be able to Analyze the performance of an IC engine based on the performance parameters. • Students will be able to Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine. • Explain the applications and working principle of rockets and jet propulsion.
IV	**I**	**Mechatronics**	• Elements & levels of mechatronics system, measurement systems, Sensors and transducers • PN junction diode, BJT, FET, DIAC, TRIAC and LEDs. Analog signal conditioning, operational amplifiers, noise reduction, filtering. • Fluid systems, Hydraulic systems, Mechanical actuating systems and electrical actuating systems. • digital logic control, micro processors and micro controllers, programming, process controllers, programmable logic controllers, PLCs versus computers, application of PLCs for control. • Data Acquisition Systems, Analog to Digital and Digital to Analog conversions; Digital Signal Processing – data flow in DSPs, block diagrams, typical layouts, Interfacing motor • System response. Process Controllers – Digital Controllers, Programmable Logic Controllers, Design of mechatronics

			systems & future trends
		CAD/CAM	- Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix - Describe the use of GT and CAPP for the product development - Identify the various elements and their activities in the Computer Integrated Manufacturing Systems.
		Finite Element Methods	- Understand the concepts behind variational methods and weighted residual methods in FEM - Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element . - Develop element characteristic equation procedure and generation of global stiffness equation will be applied. - Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form. - Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow. - The objective of the course is to teach the fundamentals of finite element method with emphasize on the underlying theory, assumption, and modeling issues as well as providing hands on experience using finite element software to model, analyze and design systems of mechanical and aerospace engineers.
		Power Plant Engineering	- Able to study resources & development of power in India. Steam power plant layout, working of different circuits, combustion properties of coal-overfeed & underfeed fuel beds CO: To understand the working principles of diesel & Gas power plant layouts. - Able to understand the working principles of hydro electric power plant & different hydro-electric plant layouts+. - Able to understand the working

			principles of nuclear power plant & types of reactors
			• Able to understand the concepts of combined operations of different power plants, power plant instrumentation & control, importance of instrumentation & measurement
			• Able to understand the concepts of power plant economics & environmental considerations
		Elective. Additive Manufacturing	• Able to understand prototyping fundamentals & advantages & limitations of RP, Classifications & also able to identify the use of SLA,SGC for manufacturing of complex components. • Able to identify the use of LOM,FDM for manufacturing of complex components. • Able to identify the use of SLS,3DP for manufacturing of complex components. • Able to understand various indirect & direct tooling techniques • Able to understand RP Data formats, features of RP Software's & To identify the STL file problems & their repair • Able to understand the applications of RP in various industries & fields.
		Elective II Advanced Materials	• Students who successfully complete this course will demonstrate the following • Properties of constituents, classification of composites and their suitability for the structural applications. • Smart materials and their applications. • Nano materials in comparison with bulk materials. • Manufacturing processes.

Electronics and Communication Engineering

YEAR	SEMESTER	SUBJECT	COURSE OUTCOMES
I/IV (R20)	I	**Applied Chemistry**	- Able to analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers. - Able to utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion. - Able to synthesize nano materials for modern advances of engineering technology and summarize the preparation of semiconductors, analyze the applications of liquid crystals and superconductors. - Able to analyze the principles of different analytical instruments and their applications and design models for energy by different natural sources. - Able to obtain the knowledge of computational chemistry and molecular machines
		ENGINEERING DRAWING	- Creating to draw the polygons, engineering curves, and scales. - Creating the projections of lines inclined to both the planes and its traces. - Understanding the different plans and draw the projections of the plane inclined to both the planes. - Analyzing the basic solids and draw the projections of the solids inclined to one of the planes. - Creating to represent and convert the isometric view to orthographic view and orthographic view to isometric view.
		COMMUNICATIVE ENGLISH	- Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers - Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials

			• Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems. • Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. • Able to solve the higher order differential equations related to various engineering fields. • Able to use functions of several variables in optimization. • Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
		PROGRAMMING FOR PROBLEM SOLVING USING C	• Understanding basic building blocks of C-programming language. • Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem • Demonstrate the use of different derived data types, Strings, structures and unions • Design and implement programs to analyze the different pointer applications • Explain various file handling mechanisms & Apply File I/O operations.
II/IV		**Electronics Devices And Circuits**	• Able to identify the properties of semiconductor material. Able to identify

(R20)			the properties of various semiconductor devices. To observe the V-I Characteristics of devices. • Students will gain on the applications of P-N Junction Diode. • Able to understand the basic principles of electronic device operation with emphasis on bipolartransistors. • Able to understand the basic parameters of electronic devices, their performance, and limitingfactors. • Able to Analysis and design of Electronic Circuits
		Switching Theory And Logic Design	• Classify different number systems apply to generate various codes and minimization of Boolean functions using Boolean algebra. • Understand minimization of switching function using K-Maps to design Combinational logic circuits. • Apply knowledge of logic circuits to design of combinational circuits and PLDs • Understand the knowledge of flip-flops in designing of Registers and counters. • Apply knowledge of state machines diagrams and tables to design sequential circuits.
		Signals And Systems	• To understand the signals and systems. • To analyze the spectral characteristics of signal using Fourier series and Fourier transform. • To understands the characteristics of system. • To introduce the concept sampling process. • To know various transform techniques to analyze the signals and systems
		Random Variable And Stochastic Process	• To give an introduction to elementary probability theory and learn basics of random variables andstochastic processes. • Understand and analyze the one random variable with different functions. • Understand and analyze the multiple random variables and their functions. • Introduction to random processes and its classification, functions. • To analyze the LTI systems with

			stationary random processes as input.
		Mathematics – III	- Interpret the physical meaning of different operators such as gradient, curl and divergence. - Estimate the work done against a field, circulation and flux using vector calculus. - Apply the Laplace transform for solving differential equations. - Find or compute the Fourier series of periodic signals. - Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms. - Identify solution methods for partial differential equations that model physical processes
III/IV (R19)		**LINEAR INTEGRATED CIRCUITS AND APPLICATIONS**	- Student will be able to analyze different issues related to the differential - Amplifiers and Operational Amplifier - Student can understand how to use op amp in real time applications. - Ability to use OP Amp as summer, Subtractor, Integrator and so. - Ability to use OP Amp as filters - Able to use OP Amp to generate different waveforms and as PLL Timer and Able to use OP Amp to as analog to digital and digital to analog converter
		MICROPROCESSORS AND MICROCONTROLLERS	- Learn and understand microprocessors 8086, it's architecture, pins, in-depth knowledge on 8086. - Acquire knowledge on instructions, addressing modes and can write the program in assembly language for the 8086. - Able to interface 8086 with different peripherals and implement programs. - Learn and understand 8051 architecture, pins, programming, interfacing devices and memory. - Ability to understand the ARM

			processors and able to write the programs on ARM Cortex M3.
		DIGITAL COMMUNICATIONS	• Understand the working of Pulse Digital Modulations such as PCM, DPCM and DM. • Learn various digital pass band modulations techniques such as ASK, FSK, PSK, QPSK, DPSK and M-ary modulation techniques. • Analyze the probability of error of various Digital Modulation systems • Understand the concepts of Information Theory and the need for source coding. Learn the theorems governing the transmission of information over a noisy channel and perform the efficiency calculations. • Perform channel coding using linear block codes, cyclic codes and convolution codes.
		ELECTRONIC MEASUREMENTS AND INSTRUMENTATION	• Learn and understand functioning of various measuring system and metrics for performance analysis. • CO2: Acquire knowledge of principle of operation, working of different electronic instruments viz. signal generators, signal analyzers • Understand the design of oscilloscopes for different applications • To compare various measuring bridges and their balancing conditions • Learn and understand the use of various measuring techniques for measurement of different physical parameters using different classes of transducers.
		SOFT COMPUTING TECHNIQUES AND PYTHON PROGRAMMING	• Understand and comprehend the basics of python programming. • Explain the use of the built-in data structures list, sets, tuples and dictionary. Make use of functions and its applications. • Identify real-world applications using oops provided by python. Formulate and implement a program to solve a real-world problem using GUI and Turtle graphics. • Understand and comprehend the Introduction to soft computing and fuzzy systems

			• Understand soft computing applications
IV/IV B.Tech ECE (R16)	**I**	**Radar Systems**	• Derive the radar range equation and to solve some analytical problems. • Understand the different types of radars and its applications. • Understand the concept of tracking and different tracking techniques. • Understand the various components of radar receiver and its performance
		Digital Image Processing	• Perform image manipulations and different digital image processing techniques • Perform basic operations like – Enhancement, segmentation, compression, Image transforms and restoration techniques on image. • Analyze pseudo and full color image processing techniques. • Apply various morphological operators on images
		Computer Networks	• Understand OSI and TCP/IP models • Analyze MAC layer protocols and LAN technologies • Design applications using internet protocols • Understand routing and congestion control algorithms • Understand how internet works
		Optical Communications	• Choose necessary components required in modern optical communications systems. • Design and build optical fiber experiments in the laboratory, and learn how to calculate electromagnetic modes in waveguides, the amount of light lost going through an optical system, dispersion of optical fibers. • Use different types of photo detectors and optical test equipment to analyze optical fiber and light wave systems. • Choose the optical cables for better communication with minimum losses Design, build, and demonstrate optical fiber experiments in the laboratory
		Electronic Switching Systems (Elective- I)	• Evaluate the time and space parameters of a switched signal • Establish the digital signal path in time and space, between two terminals

			• Evaluate the inherent facilities within the system to test some of the SLIC, CODEC and digital switch functions. • Investigate the traffic capacity of the system. • Evaluate methods of collecting traffic data. • Evaluate the method of interconnecting two separate digital switches
		Embedded Systems (Elective – II)	• Understand the basic concepts of an embedded system and able to know an embedded system design approach to perform a specific function. • The hardware components required for an embedded system and the design approach of an embedded hardware. • The various embedded firmware design approaches on embedded environment. • Understand how to integrate hardware and firmware of an embedded system using real time operating system.

Computer Science Engineering

YEAR	SEMESTER	SUBJECT	COS
I/IV (R20)	**I**	**APPLIED PHYSICS**	• Able to know the differences between interference, diffraction and polarization with its Engineering applications. • Able to understand the concepts of LASER and optical fiber. Apply these concepts in various Engineering and medical fields. • Able to identify the role of Quantum mechanics and Free electron theory to resolve various problems in microscopic level of matter. • Able to apply the concepts of dielectric and magnetic materials in emerging micro devices.Able to apply the knowledge of semiconductors and superconductors in electronic and electromagnetic devices.
		COMMUNICATIV E ENGLISH	• Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers • Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials • Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems. • Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. • Able to solve the higher order differential equations related to various engineering fields. • Able to use functions of several variables

				in optimization.
				• Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
			PROGRAMMING FOR PROBLEM SOLVING USING C	• Understanding basic building blocks of C-programming language.
				• Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem
				• Demonstrate the use of different derived data types, Strings, structures and unions
				• Design and implement programs to analyze the different pointer applications
				• Explain various file handling mechanisms & Apply File I/O operations.
II/IV	I		MATHEMATICS	• Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)
				• Estimate the work done against a field, circulation and flux using vector calculus (L5)
				• Apply the Laplace transform for solving differential equations (L3)
				• Find or compute the Fourier series of periodic signals (L3)
				• Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
				• Identify solution methods for partial differential equations that model physical processes (L3)
			OOP WITH C++	• Classify object oriented programming and procedural programming
				• Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling
				• Build C++ classes using appropriate encapsulation and design principles
				• Apply object oriented or non-object

			oriented techniques to solve bigger computing problems
		OPEARTING SYSTEMS	- Describe various generations of Operating System and functions of Operating System - Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance - Solve Inter Process Communication problems using Mathematical Equations by various methods - Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques - Outline File Systems in Operating System like UNIX/Linux and Windows
		SOFTWARE ENGINEERING	- Ability to transform an Object-Oriented Design into high quality, executable code - Skills to design, implement, and execute test cases at the Unit and Integration level - Compare conventional and agile software methods
		MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE	- Demonstrate skills in solving mathematical problems - Comprehend mathematical principles and logic x Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software - Manipulate and analyze data numerically and/or graphically using appropriate Software - Communicate effectively mathematical ideas/results verbally or in writing
		APPLICATIONS OF PYTHON	- Explain how data is collected, managed and stored for processing - Understand the workings of various numerical techniques, different descriptive measures of Statistics, correlation and regression to solve the engineering problems - Understand how to apply some linear algebra operations to n-dimensional arrays - Use NumPy perform common data wrangling and computational tasks in Python.

III	I	DATAWAREHOUSING AND DATA MINING	• Design a Data warehouse system and perform business analysis with OLAP tools • Apply suitable pre-processing and visualization techniques for data analysis • Apply frequent pattern and association rule mining techniques for data analysis • Apply appropriate classification techniques for data analysis • Apply appropriate clustering techniques for data analysis.
		COMPUTER NETWORKS	• Illustrate the OSI and TCP/IP reference model • Analyze MAC layer protocols and LAN technologies • Design applications using internet protocols • Implement routing and congestion control algorithms • Develop application layer protocols
		COMPILER DESIGN	• Design, develop, and implement a compiler for any language • Use LEX and YACC tools for developing a scanner and a parser • Design and implement LL and LR parsers • Design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity • Apply algorithms to generate machine code
		ARTIFICIAL INTELLIGENCE	• Outline problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem • Apply the language/framework of different AI methods for a given problem • Implement basic AI algorithms- standard search algorithms or dynamic programming • Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports
		SOFTWARE TESTING METHODOLOGIES	• Identify and understand various software testing problems, apply software testing knowledge and engineering methods and solve these problems by designing and selecting software test models, criteria, strategies, and methods • Design and conduct a software test process for a software project • Analyze the needs of software test

			automation
			• Use various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects
			• Basic understanding and knowledge of contemporary issues in software testing, such as component-based, web based and object oriented software testing problems
			• Write test cases for given software to test it before delivery to the customer and write test scripts for both desktop and web based application
IV	I	**CRYPTOGRAPHY AND NETWORK SECURITY**	• Be able to individually reason about software security problems and protection techniques on both an abstract and a more technically advanced level. • Be able to individually explain how software exploitation techniques, used by adversaries, function and how to protect against them.
		BIG DATA ANALYTICS	• Preparing for data summarization, query, and analysis. • Applying data modeling techniques to large data sets • Creating applications for Big Data analytics • Building a complete business data analytic solution
		WEB TECHNOLOGIES	• Outline the history of web and technologies that makes the web pages. Design web pages using the concepts of Html, CSS and JavaScript. • Acquire the concepts of XML, DTD and XML schemas • Learn AJAX and write simple client side scripts using AJAX • Build web applications using PHP by integrating PHP to databases. • Learn and create dynamic and interactive web pages using PERL. • Design dynamic websites with latest technical advancements in RUBY
		SOFTWARE	• To understand interrelationships,

		ARCHITECTURE AND DESIGN PATTERNS (elective 1)	principles and guidelines governing architecture and evolution over time. • To understand various architectural styles of software systems. • To understand design patterns and their underlying object oriented concepts. • To understand implementation of design patterns and providing solutions to real world software design problems. • • To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.
		MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	• Equipped with the knowledge of estimating the Demand for a product and the relationship between Price and Demand. • Ability to understand the Cost Concepts for decision making and to estimate the least Cost combination of inputs. • Acquire the knowledge of the nature of different markets and Price Output determination under various market conditions. • To evaluate various investment project proposals with the help of capital budgeting techniques for decision making. • The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis

Computer Science Engineering- Data Science

YEAR	SEMESTER	SUBJECT	COURSE OUTCOMES
I/IV (R20)	I	**Applied Chemistry**	• Able to analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers. • Able to utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion. • Able to synthesize nano materials for modern advances of engineering technology and summarize the preparation of semiconductors, analyze the applications of liquid crystals and superconductors. • Able to analyze the principles of different analytical instruments and their applications and design models for energy by different natural sources.Able to obtain the knowledge of computational chemistry and molecular machines
		COMMUNICATIVE ENGLISH	• Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers • Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials • Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems.

			- Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. - Able to solve the higher order differential equations related to various engineering fields. - Able to use functions of several variables in optimization. - Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
		PROGRAMMING FOR PROBLEM SOLVING USING C	- Understanding basic building blocks of C-programming language. - Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem - Demonstrate the use of different derived data types, Strings, structures and unions - Design and implement programs to analyze the different pointer applications - Explain various file handling mechanisms & Apply File I/O operations.
II/IV (R20)	**I**	**MATHEMATICS-III**	- Interpret the physical meaning of different operators such as gradient, curl and divergence (L5) - Estimate the work done against a field, circulation and flux using vector calculus (L5) - Apply the Laplace transform for solving differential equations (L3) - x Find or compute the Fourier series of periodic signals (L3) - Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3) - Identify solution methods for partial differential equations that model physical processes (L3)

		MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE	• Demonstrate skills in solving mathematical problems • Comprehend mathematical principles and logic • Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software • Manipulate and analyze data numerically and/or graphically using appropriate Software • Communicate effectively mathematical ideas/results verbally or in writing
		FUNDAMENTALS OF DATA SCIENCE	• Apply principles of NumPy and Pandas to the analysis of data. • Make use of various file formats in loading and storage of data. • Identify and apply the need and importance of pre-processing techniques. • Show the results and present them in a pictorial format.
		OOP WITH JAVA	• Able to realize the concept of Object Oriented Programming & Java Programming Constructs • Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords • Apply the concept of exception handling and Input/ Output operations • Able to design the applications of Java & Java applet • Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit
		DATABASE MANAGEMENT SYSTEMS	• Describe a relational database and object-oriented database • Create, maintain and manipulate a relational database using SQL • Describe ER model and normalization for database design • Examine issues in data storage and query processing and can formulate appropriate solutions • Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
		MOBILE APP DEVELOPMENT	• Identify various concepts of mobile programming that make it unique from

			programming for other platforms 2. Critique mobile applications on their design pros and cons 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, 4. Program mobile applications for the Android operating system that use basic and advanced phone features and 5. Deploy applications to the Android marketplace for distribution

Computer Science Engineering- Artificial Intelligence and Machine Learning

YEAR	SEMESTER	SUBJECT	COURSE OUTCOMES
I/IV (R20)	I	**Applied Chemistry**	• Able to analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers. • Able to utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion. • Able to synthesize nano materials for modern advances of engineering technology and summarize the preparation of semiconductors, analyze the applications of liquid crystals and superconductors. • Able to analyze the principles of different analytical instruments and their applications and design models for energy by different natural sources.Able to obtain the knowledge of computational chemistry and molecular machines
		COMMUNICATIVE ENGLISH	• Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers • Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials • Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems. • Able to gain knowledge on solving first

			order differential equations and its applications to various engineering fields. • Able to solve the higher order differential equations related to various engineering fields. • Able to use functions of several variables in optimization. • Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
		PROGRAMMING FOR PROBLEM SOLVING USING C	• Understanding basic building blocks of C-programming language. • Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem • Demonstrate the use of different derived data types, Strings, structures and unions • Design and implement programs to analyze the different pointer applications • Explain various file handling mechanisms & Apply File I/O operations.
II	**I**	**MATHEMATICS-III**	• Interpret the physical meaning of different operators such as gradient, curl and divergence (L5) • Estimate the work done against a field, circulation and flux using vector calculus (L5) • Apply the Laplace transform for solving differential equations (L3) • x Find or compute the Fourier series of periodic signals (L3) • Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3) • Identify solution methods for partial differential equations that model physical processes (L3)
		MATHEMATICAL	• Demonstrate skills in solving

		FOUNDATIONS OF COMPUTER SCIENCE	mathematical problems • Comprehend mathematical principles and logic • Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software • Manipulate and analyze data numerically and/or graphically using appropriate Software • Communicate effectively mathematical ideas/results verbally or in writing
		INTRODUCTION TO ARTIFICIAL INTELLIGENCE &MACHINE LEARNING	• Enumerate the history and foundations of Artificial Intelligence • Apply the basic principles of AI in problem solving • Choose the appropriate representation of Knowledge • Enumerate the Perspectives and Issues in Machine Learning • Identify issues in Decision Tree Learning
		OOP WITH JAVA	• Able to realize the concept of Object Oriented Programming & Java Programming Constructs • Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords • Apply the concept of exception handling and Input/ Output operations • Able to design the applications of Java & Java applet • Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit
		DATABASE MANAGEMENT SYSTEMS	• Describe a relational database and object-oriented database • Create, maintain and manipulate a relational database using SQL • Describe ER model and normalization for database design • Examine issues in data storage and query processing and can formulate appropriate solutions • Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage

Information Technology

YEAR	SEMESTER	SUBJECT	COS
I/IV (R20)	I	**APPLIED PHYSICS**	• Able to know the differences between interference, diffraction and polarization with its Engineering applications. • Able to understand the concepts of LASER and optical fiber. Apply these concepts in various Engineering and medical fields. • Able to identify the role of Quantum mechanics and Free electron theory to resolve various problems in microscopic level of matter. • Able to apply the concepts of dielectric and magnetic materials in emerging micro devices.Able to apply the knowledge of semiconductors and superconductors in electronic and electromagnetic devices.
		COMMUNICATIVE ENGLISH	• Able to facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers • Able to focus on appropriate reading strategies for comprehension of various academic texts and authentic materials • Able to help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations • Able to impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information • Able to provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		MATHEMATICS-I	• Able to apply mean value theorems to engineering problems. • Able to gain knowledge on solving first order differential equations and its applications to various engineering fields. • Able to solve the higher order differential equations related to various engineering fields. • Able to use functions of several

			variables in optimization.
			• Able to apply the tools of calculus for calculating the areas and volumes using multiple integrals
		PROGRAMMING FOR PROBLEM SOLVING USING C	• Understanding basic building blocks of C-programming language.
			• Use different operators, data types and write programs that use two-way/ multi way selection & Select the best loop construct for a given problem
			• Demonstrate the use of different derived data types, Strings, structures and unions
			• Design and implement programs to analyze the different pointer applications
			• Explain various file handling mechanisms & Apply File I/O operations.
II	I	**Mathematics - III**	• Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)
			• Estimate the work done against a field, circulation and flux using vector calculus (L5)
			• Apply the Laplace transform for solving differential equations (L3)
			• Find or compute the Fourier series of periodic signals (L3)
			• Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
			• Identify solution methods for partial differential equations that model physical processes (L3)
		Object Oriented Programming through C++	• Classify object oriented programming and procedural programming
			• Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling
			• Build C++ classes using appropriate

			- encapsulation and design principles - Apply object oriented or non-object oriented techniques to solve bigger computing problems
		Operating Systems	- Describe various generations of Operating System and functions of Operating System - Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance - Solve Inter Process Communication problems using Mathematical Equations by various methods - Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques - Outline File Systems in Operating System like UNIX/Linux and Windows
		Database Management Systems	- Describe a relational database and object-oriented database - Create, maintain and manipulate a relational database using SQL - Describe ER model and normalization for database design - Examine issues in data storage and query processing and can formulate appropriate solutions - Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
		Discrete Mathematics and Graph Theory	- Demonstrate skills in solving mathematical problems - Comprehend mathematical principles and logic - Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software - Manipulate and analyze data numerically and/or graphically using appropriate Software
III/IV (R19)	**I**	**Advanced Data Structures**	- Illustrate several sub-quadratic sorting algorithms. - Demonstrate recursive methods - Apply advanced data structures such as balanced search trees, hash tables,

			priority queues and the disjoint set union/find data structure
		Computer Networks	- Illustrate the OSI and TCP/IP reference model - Analyze MAC layer protocols and LAN technologies
		Compiler Design	- Design, develop, and implement a compiler for any language - Use LEX and YACC tools for developing a scanner and a parser - Design and implement LL and LR parsers - Design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity - Apply algorithms to generate machine code
		Artificial Intelligence	- Outline problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem - Apply the language/framework of different AI methods for a given problem - Implement basic AI algorithms - Design and carry out an empirical evaluation of different algorithms on problem formalization and state the conclusions that the evaluation supports
		Professional Elective -I **Software Testing Methodologies**	- Identify and understand various software testing problems, apply software testing knowledge and engineering methods and solve these problems by designing and selecting software test models, criteria, strategies, and methods - Design and conduct a software test process for a software project - Analyze the needs of software test automation - Use various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects - Basic understanding and knowledge of contemporary issues in software testing, such as component-based, web based and object oriented software testing problems - Write test cases for given software to test it before delivery to the customer and

			write test scripts for both desktop and web based applications
		Professional Elective - I **NoSQL Databases**	• Identify what type of NoSQL database to implement based on business requirements (key-value, document, full text, graph, etc.) • Apply NoSQL data modeling from application specific queries • Use Atomic Aggregates and denormalization as data modelling techniques to optimize query processing
		Professional Elective - I **Scripting Languages**	• Ability to understand the differences between scripting languages • Create PHP authentication Methodology for security issues • Identify PHP encryption functions and Mcrypt Package • Explain syntax and variables in TCL • Able to gain some fluency programming in Ruby, JavaScript, Perl, Python, and related languages • Master an understanding of python especially the object oriented concepts
		Professional Elective - I **Computer Graphics**	• Illustrate the basics of computer graphics, different graphics systems and applications of computer graphics with various algorithms for line, circle and ellipse drawing objects for 2D transformations • Apply projections and visible surface detection techniques for display of 3D scene on 2D screen • Illustrate able to create the general software architecture of programs that use 3D object sets with computer graphics
		Professional Elective - I **R- Programming**	• Demonstration and implement of basic R programming framework and data structures • Explain critical R programming language concepts such as control structures and recursion • Applying mathematical and statistical operations data structures in R • Examine data-sets to create testable hypotheses and identify appropriate statistical tests • Make use of appropriate statistical tests using R and Create and edit

			• visualizations with regression models • Define model choices and results
		Design and Analysis of Algorithms	• Describe asymptotic notation used for denoting performance of algorithms • Analyze the performance of a given algorithm and denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms • List and describe various algorithmic approaches • Solve problems using divide and conquer, greedy, dynamic programming, backtracking and branch and bound algorithmic approaches • Apply graph search algorithms to real world problems • Demonstrate an understanding of NP-Completeness theory and lower bound theory
IV/IV (R16)	**I**	**CRYPTOGRAPHY AND NETWORK SECURITY**	• To be familiarity with information security awareness and a clear understanding of Its importance. • To master fundamentals of secret and public cryptography • To master protocols for security services • To be familiar with network security threats and countermeasures • To be familiar with network security designs using available secure solutions (such asPGP, SSL, IPSec, etc)
		MOBILE COMPUTING	• Able to think and develop new mobile application. • Able to take any new technical issue related to this new paradigm and come up with a solution(s). • Able to develop new ad hoc network applications and/or algorithms/protocols. • Able to understand & develop any existing or new protocol related to mobile environment
		DATA WAREHOUSING AND BUSINESS INTELLIGENCE	• Describe the scope and application of business intelligence and decision support; • Design systems for sourcing and structuring data to provide an integrated,

			non-volatile collection of data for decision support using data warehouses;
			• Design multidimensional data models and implement them using star schemas and relational databases;
			• Communicate and foster realistic expectations of the role of OLAP technology and business intelligence systems in management and decision support;
			• Explain the need for evolutionary development approaches to developing business intelligence and data warehouse systems;
			• Develop a simple business intelligence system using an OLAP tool;
			• Apply theories and principles of data visualization to encourage high quality analysis of business information to inform decision making;
			• Design governance mechanisms for the development and management of business intelligence and data warehouse systems in an organization.
		MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	• The Learner is equipped with the knowledge of estimating the Demand and demand elasticities
			• for a product and the knowledge of understanding of the Input-Output-Cost relationships and
			• estimation of the least cost combination of inputs.
			• One is also ready to understand the nature of different markets and Price Output determination
			• under various market conditions and also to have the knowledge of different Business Units.
			• The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis and to evaluate various investment project proposals with the help of capital

			budgeting techniques for decision making.
		BIG DATA ANALYTICS (Elective - 1)	• Preparing for data summarization, query, and analysis. • Applying data modeling techniques to large data sets • Creating applications for Big Data analytics • Building a complete business data analytic solution
		INFORMATION RETRIEVAL SYSTEMS	• dentify basic theories in information retrieval systems • dentify the analysis tools as they apply to information retrieval systems • Understands the problems solved in current IR systems • Describes the advantages of current IR systems • Understand the difficulty of representing and retrieving documents. • Understand the latest technologies for linking, describing and searching the web.
		INTERNET OF THINGS	• Demonstrate knowledge and understanding of the security and ethical issues of the • Internet of Things • Conceptually identify vulnerabilities, including recent attacks, involving the Internet of Things • Develop critical thinking skills • Compare and contrast the threat environment based on industry and/or device type
		MULTIMEDIA PROGRAMMING	• Ability to design a short films and teaching material for better understanding. • Ability to apply different multimedia development tools to produce web based and stand-alone user interfaces.
		CLOUD COMPUTING (Elective-II)	• Understanding the key dimensions of the challenge of Cloud Computing • Assessment of the economics , financial,

			and technological implications for selecting cloud computing for own organization • Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications. • Assessment of own organizations' needs for capacity building and training in cloud • computing-related IT areas
		SOFTWARE PROJECT MANAGEMENT	• To match organizational needs to the most effective software development model • To understand the basic concepts and issues of software project management • To effectively Planning the software projects • To implement the project plans through managing people, communications and change • To select and employ mechanisms for tracking the software projects • To conduct activities necessary to successfully complete and close the Software projects • To develop the skills for tracking and controlling software deliverables • To create project plans that address real-world management challenges
		MACHINE LEARNING	• Recognize the characteristics of machine learning that make it useful to real-world problems • Characterize machine learning algorithms as supervised, semi-supervised, and unsupervised. • Have heard of a few machine learning toolboxes. • Be able to use support vector machines. • Be able to use regularized regression algorithms. • Understand the concept behind neural

			networks for learning non-linear functions.
		DECISION SUPPORT SYSTEMS	- Recognize the relationship between business information needs and decision making - Appraise the general nature and range of decision support systems - Appraise issues related to the development of DSS - Select appropriate modelling techniques

Masters of Business Administration

YEAR	SEMESTER	SUBJECT	Course Outcomes
I	I	**Management and Organizational Behaviour**	• student has learned about Evolution of Management thought Scientific management, administrative management, Haw throne experiments systems approach Levels of Management Managerial Skills • student has gained knowledge on Principles of organizing ,Organization Structure and Design ,Types of power , Delegation of Authority and factors affecting delegation , Span of control , Decentralization , Line and staff structure conflicts • obtained knowledge on Organizational behavior: Nature and scope , Linkages with other social sciences , Individual roles and organizational goals , perspectives of human behavior , Perception, perceptual process • student has learned about Content and process Theories of Motivation , Leadership - Styles , Approaches ,Challenges of leaders in globalized era , Groups ,stages formation of groups , Group Dynamics • student has learned about Organizational conflict-causes and consequences-conflict and Negotiation Team Building, Conflict Resolution in Groups and problem solving Techniques
		Managerial Economics	• know the economy and its principles. • understand the relationship between the demand supply • learn the types of production and its factors. • To understand the cost concepts, relationship between cost, volume and profit • To know the market atructure and pricing theories.
		Accounting for Managers	• Acquaint the knowledge about accounting process • focus on analysis of Financial Statements • gain knowledge about Inventory issue methods • obtain knowledge about Management

			• accounting applications • Focus on standard costing tools & Break Even Analysis
		Quantitative Techniques for Business Decisions	• the concepts of basic mathematical and statistical techniques are learned which are used in business studies • equipped with statistical decision theory applied in business studies • knowledge on analyising linear programming problems are learned • understand the concepts of assingnment & transportment models • the techniques of networking models are learned
		Legal and Business environment	• Determine the meaning of Business Environment and its significance • Acquaint the knowledge of Political & Economic Environment • Gain knowledge on Legal Environment specially to Indian Context • Obtain the knowledge of Indian Partnership Act 1962 • Focus on miscelleanious acts of Indian Context
		Business Communication and Soft Skills	• uptained knowledge of objectives of communication • Acquaint the knowledgeinterpersonal and intrapersonal communication theories • Obtain the knowledge etiquettes of interview • equipped with business correspondence letters • uptained knowledge of interview techniques for group discussion
		Cross Cultural Management	• understand the concepts of cross culture dimensions • obtain knowledge about communication strategy fot indian MNC/foregin MNC • acquaint knowledge of negotiation overview with two illustations from multicultural contexts • acquaint knowledge of staffing and training for global operations ,expatriates • understand the concepts of desining the stretegy for a culture change building

I	II	Financial Management	• gain knowledge about concepts of financial management • obtain knowledge about Capital structure theories • understand the Investment decision process & its tools • understand the theories of Dividend • acquaint knowledge of Working Capital Cycle.
		Human Resource Management	• undestand the base concept of HRM and its significance in the organisation • undestand the investment perspectives of HRM(Training and Development) • understand the concepts of Performance Appraisal: Importance – Methods – Traditional and Modern methods – Latest trends in performance appraisal • Enhanced knowledge and skills to Wage Structure- Wage and Salary Policies • Gain the knowledge on Employee Participation Schemes, Grievances and disputes resolution mechanism
		Marketing Management	• understand the concepts of marketing. • Gain the knowledge on market segmentation. • Understand the concepts of pricing and price changes • Gain the knowledge on promotion activities. • Evoluation of marketing department.
		Operations management	• Gain knowledge on Operations Management & its scope • acquaint knowledge on Product Process & Design • gain the knowledge on Forecasting & Capacity Planning • Understand the Productivity & influencing factors • Gain the knowledge on Quality management
		Business Research Methods	• enhanced knowledge and skills to carry out research for business • better awarness on data collection techniques, measurement and scaling • gained knowledge in preparation and presentation of research report • equipped student with statistical

			techniques
			• students were in a position to use multivariate techniques
		Technology management	• Student has learned about Evolution of Technology-Effects of New Technology-Technology Innovation, Invention,Innovation, Diffusion, Revolutionary and Evolutionary Innovation- Product and Process Innovation , Strategic Implications of Technology
			• Student has gained knowledge on Technology Assessment- Technology Choice Technological Leadership and Followership Technology Acquisition Technological Forecasting- Exploratory, Intuitive, Extrapolation, Growth Curves, Technology Monitoring
			• obtaibned knowledge on Diffusion of Technology Rate of Diffusion; Innovation Time and Innovation Cost Speed of Diffusion Technology Indicators Various Indicators- Organizational Implications of Technology
			• Student has learned abFinancial Aspects in Technology Management- Improving Traditional Cost Management System Barriers to the Evaluation of New Technology Social Issues in Technology Management
			• learner has got knowlede on Human Aspects in Technology Management- Integration of People and Technology Organizational and Psychological Factors
II	**I**	**Strategic Management**	• Gain knowledge about Vision, Mission and Objectives of the Organisation.
			• Acquaint the student with knowledge about strengths, weakness, opportunities and threats of the organization.
			• Understand about framing of Strategy at various levels.
			• Acquaint the student with knowledge about structures of organization and its impact on Strategy.
			• Obtain knowledge of Evaluation of strategy and its control.
		Operations Research	• To acquaint the students with basic knowledge of the overview of Operations Research

			• To gain knowledge about Transportation Models and assignment Models • To know and understand about various applications of dynamic programming & replacement models. • To understand the concept of Game Theory and simulations Models • To understand the nature and scope of Netwoking Models.
			• To acquiredthe student with basic knowledge the concept of New millennium organization, leadership skills. • To acquainted the student with basic knowledge of the concept of organizational development. And the concept of challenges in motivating employees. • To Gained knowledge about characteristics, principles and significance of continuous learning. And leadership attitude • To acquired the student with basic knowledge the concept of change management programmes and value based change • To Gained knowledge about OD interventions and total project management model.
		Leadership and Change Management	• Knowledge on performance measurement, its background, influencing factors and consequences of in organization. They can processes for managing performance – critical appraisal-Performance Audit are gained. • Knowledge on Goal Setting-Linkages to Strategic Planning- Competency mapping- Career Development- Monitoring Performance Planning is imparted. • Equipped knowledge in the area of Performance Management Cycle- Competency based Performance Management Systems- If also emphasizes on Traditions and Modern Techniques, Balanced Score Card- 360 Degree Performance Apprising- Merit Rating • Gained in depth knowledge on the compensation program and employee attitude. • The concept on the pay structures and tax

			planning in Indian context are understood.
		Human Capital Management	• To know the Basic Economic Theories in Human Capital • To gain knowledge related to different Accounting aspects of Human Capital • To understand an assess existing theories and practices in the field of Human capital management • To understand the concept of Quality of workers work life in Human Capital Management • To learn about Industrial Accidents and Safety precautions in Industries.
		Manapower Planning, Recruitment & Selection	• To know the meaning of Human Resource Planning, various factors and techniques affects demand and supply of HRP. • To understand the various human resource distribution mapping and usage of downsizing strategies • To learn the nature and process of job analysis and job design. • To know the importance, methods of recruitment and selection and barriers to effective selection. • To focus on steps involved in training and development and Requisites of Effective Training programs.
		Investment Analysis and Portfolio Management	• To acquaint the student with basic knowledge of Investment, speculation and Investment Process • Gain knowledge about Risk, Return and Shares • To understand tools and techniques of Fundamental and Technical Analysis. • To understand about the elements of Portfolio Management and evaluation of securities • To acquaint knowledge on evaluation of securities through Sharpe and Markowitz Models.
		Managing Banks and Financial Institutions	• Acquaint the knowledge on Banking & Indian Financial System • Focus on uses of bank funds & Non-Performing Assets • Acquaint concepts of Banking Innovations • Equipped the knowledge on Insurance in India

			• Gain knowledge on Life & General Insurance in India
		Financial Markets & Services	• To Create the awareness on RBI and SEBI • To understand various financial services in India • Able to learn Venture Capital Financing • To understand rating of the customers • To know the need of Micro Finance.
		Taxation	• Able to know the basics of Tax, Tax on agricultural income & Income Tax Act. • Understand all about the Central Value Added Tax (CENVAT) • Able to know Tax Plannings and its Principles • Learner understand the Elements of Tax considerations, tax management and tax decisions • Understand about the International Taxation system and legal aspects.
		Hospital Organization & Management	• To know the Role of a professional manager in a Hospital • To understand the Managerial functions in a hospital • Able to understand the Behavioural concepts and theories • Understands the concept of Organization structure and planning process • To learn Organizational climate and social responsibility
		Health Care Policies and Delivery systems	• Gain Knowledge about concepts Internal and External Environment and Environmental Scanning • Understand the Conceptual Approach to the Health Care Systems • Gain the sound knowledge on Overview of Health care sector in India • Acquaint knowledge of Health Care Regulations and other Health care Delivery Systems. • Able to correlate the relationship Descriptive, Analytical and Experimental Epidemiology
		Hospital Functions and Support Services	• Knowledge on various services providing by the hospitals are gained • Understood about different departments involved in maintenance of civil assets and facilities providing by the hospitals.

			• Known about the CSS department, importance of energy conservation and its methods. • In depth knowledge on ambulance, mortuary and security services are gained. • Equipped knowledge on supportive services and disaster management.
		Revenue Cycle Management	• To know the Meaning and scope of patient care services, Role and functions of Administrator in hospitals and classification of Hospital. • To understand the various front office services for in-patient, out-patient and accident and emergency services. • To learn the various types of Lab services are Radiology and Imaging services, Rehabilitation services and blood bank services. • To know the importance of Operation theatre, types of Operation theatre and ICU service provided by hospitals. • Focus on quality patient care services and hospital accreditation.
II	**II**	**Supply Chain Management & Analytics**	• Obtain knowledge on basics of SCM and its drivers • Learner is able to understand tools of supply chain analysis and MRP • Understand the Management of different algorithms relevant to Supply chain • Equip with various concepts of value adding in Supply chain • Gain knowledge on implementation of Supply chain in various industries in practical manner.
		Innovation & Entrepreneurship	• Able to understand meaning, scope and importance of entrepreneurship development. • Students obtained the knowledge of creativity & Entrepreneurial plan • Students are able to plan & execute the operation problems • Able to understand Family & non-family entrepreneurs • Able to understand the Innovation & Management
		Labour Welfare & Employment Laws	• Obtain knowledge on Labour welfare. • Learner is able to understand Statutory & Non-statutory labour welfare programmes.

			• Understand the Labour Legislation. • Equip with Industrial Relations Legislation • Gain knowledge on various acts pertaining to Social Security Legislations.
		International HRM	• To gained knowledge on the Concepts of a Global HR Perspective in New Economy- Challenges of Globalization - Implications of Managing People and Leveraging Human Resource • To attained The concepts of Strategies - International assignments forWomenProblems. • To gained knowledge in Cross Culture Communication and Negotiation, CrossCultureTeams. • To understood The concepts of Compensation Management:Importance, Concepts- Trends, Issues, Methods, FactorsofConsideration–Models • To gained knowledge on Analysis of Strategic Frame Work of HRD and Challenges - Globalization and Quality of Working LifeandProductivity
		Human Resource Development	• To know the meaning, need, scope of Human Resource Development, various functions and techniques affects HRD. • To understand the various human resource development strategies, designing training and development and methods of implementation. • To understand the various human resource development strategies, designing training and development and methods of implementation. • To learn the methods for reducing employee stress and providing wellness and health promotions and career planning. • Focus on steps involved in HRD for innovation, Ethical problems with HRD roles for various workers.
		Strategic HRM	• To Gained the Concepts of Importance of Human Resources to Strategy- Human Resources contribution to strategy • Understood The concepts of Strategies - Efficient utilization of Human resources -

			Dealing with employee surpluses and shortages
- The gained knowledge in Oriented performance measurement systems - Strategically oriented compensation system
- The attained The concepts of Building core competencies through Human Resource Development - Competency mapping approaches
- Understood the Analysis of Strategic Frame Work of Approaches to evaluation, Evaluation Strategic contributions of Traditional Areas and emerging areas
		Financial Derivatives	- Student has learned about the basics of risk management and different types of risks.
- The students has gained knolwedge on Value of Risk, Cash flow risk, Asset liability Management
- Student has learned about Derivatives and its types.
- Learner has understood about Swaps & its types
- Student has learned about the Options, Binomial Option Pricing Model.
		Global Financial Management	- Obtain knowledge on Globalization & MNC's
- Learner is able to understand Exchange & Interest rate exposures
- Understand the Management of Global Business Operations
- Equip with International Investment Decisions
- Gain knowledge on Global Indebtedness
		Financial Risk Management	- Obtain knowledge on Risk Management framework
- Learner is able to understand tools of measuring Risk
- Understand the Management of risk in corporate
- Equip with regulatory bodies for various markets
- Gain knowledge on various models of Risk management
		Strategic Financial Management	- To know the theories of share holders value creation.
- To learn Corporate Financial strategies

			• To understand the techniques of Investment Strategies • To know the Corporate Financial Engineering • To understand Corporate Restructuring.
		Patent Care & Service Management	• To know the Meaning and scope of patient care services, Role and functions of department managers in enhancing care and risk management. • To understand the various Systems approach towards quality improvement for various patients. • To know the various types of patients and innovative methods for classifying patients. • To learn the important ethical principles of patient and hospital negligence in the form of Patient appeals, Autopsy, Tort liability, vicarious liability and different types of patient protection laws. • To understand basic Policies & procedures for maintaining medical records and general procedure for patient safety.
		Managed Health Care & Insurance	• To know the concepts of Life and Health Insurance • To understand the concept of Health Insurance Policies in India • Able to know the Adminsitration of Health Insurance Policies • Acquainted with Taxation of Health Insurance • Understood the Regulations of Health Insurance Policies in India.
		Health laws, Ethics & Regulations	• Acquainted knowledge of Laws relating to Hospital formation, Promotion • Gain the sound knowledge on Laws relating Purchases and funding, Laws pertaining to Health. • Acquaint knowledge of Laws pertaining to Hospitals Medical Negligence,Medico Legal Case • Understood the Concep of Medical Terminology,Glossary of medical terms • Equippped with applications of Maintaining Medical Records, Medical Registers, Statutory records.
		Hospital Management,	• The impact of overflow of information

		Information System	on people and future of health care technology is understood.
			• The knowledge on health records, various advanced technologies using to store health records and its usefulness is attained.
			• The concept of securing information, different phases of system Development Life Cycle, and projects are understood.
			• The information about the key devices, technologies to communicate the information and to access the information are known.
			• Got aware of telehealth, advanced technologies available to protect public health.

Integrated Masters in Business Administration

YEAR	SEMESTER	SUBJECT	COURSE OUTCOMES
I	I	**English language-1**	• To make the students understand humour and the contributions of Mokshagundam to build modern india, The students also develop their LSRW skills. • To make the students aware of Polymer currency and inspire them with the unique journey of Helen Keller. • To make the students aware of Man-made disasters and how to prevent and prepare for them. They learn about the South Indian small town life through R.K. Narayan's work • The students gain awareness about human values and ethics which contain the core values of our education policy and also experience the pathos in the story The Last Leaf. • Students learn about the importance of sports and how they can improve their health and also the motivating speech from technocrat Narayanamurthy of Infosys.
I	I	**Business Mathematics and statistics**	• to equip students the knowledge of basic mathematical techniques • to understand the concepts of matrices in business studies • to recollect the knowledge of statistics • to provide better knowledge on probability theory • to enhance the understanding of bi variate statistical techniques
I	I	**Fundamentls Of Business organisation**	• To understand the concepts of business • To know the responsibilities , source of finance for an entreprenuier • To understand various types of business • To find out the difference between public and private companies. • To know how to commence the business.

I	I	Financial Acconting -1	- students has understood about basics of accounting - students has got awairness on basics of the journal and the trail balance - Able to know about basic of ledger posting - students has understood about the final accounts and income statement - students has got awairness on basis of ratio analysis and different types of ratios
I	I	Fundamentals Of Computers	- Able to understand the basics of computers & devices - Learnder able to know the different types of operating system - focus on various application softwares used in day to day manner - Understand the concept of E-Business - Equip with computer networks
II	I	Principles of Management	- Interpret basic concept and theories of management - Outline plan and different organizational structures - Classify different leadership style in cross culture environment - Develop rationale decision making and problem solving abilities. - Cite contemporary isssues and approaches to management
I	I	Cost Accounting	- Learner has got awairness on Management accounting vs Cost accounting role of accounting information in planning and control, cost concepts and managerial use of classification of costs - students able to know about the Direct and Indirect expenses, allocation and apportionment of overheads, calculation of machine hour rate and labour hour rate - students has got awairness on Application of Marginal costing in terms of cost control, Income determinants under marginal cost-Absorption Cost Vs Marginal Cost. Key or Limiting Factor. - students understood about concept of cost ,volume-profit relationship ,Profit

			Planning , make or buy decision- Selection of suitable product mix, desired level of Profits , Determination of Break even point, Break-even-graph and assumptions of BEP, importance, • students has got awairness about Standard Cost and Standard Costing, standard costing vs. budgetary control, standard costing vs. estimated cost, standard costing and marginal costing,
II	I	**Banking theory and Practices**	• understand the functions of commercial banks and credit creation limitations • Determine the functions and components of indian money markets • knowledge of Banking Regulations act 1949 causes of Non Performing Assets • focus on innovative banking and Hi.Tech banking • correlate the relationship between banker and customer
II	I	**Business Law**	• Describe three different relationships that could be created the law of agency • Explain about sale of goods act • Distinguish forms of business organisations • compare consumer protection act 1986 and contract of agency • research negotiable instruments act 1881
II	I	**Entreprenuership Development**	• Able to understand meaning, scope and importance of entrepreneurship development • students obtained the knowledge of training, progress and feed back system of ED • Students are able to plan and excecute the small projects wth all teh properties of ED • Able to undertand Importance of MSME's • Able to understand the Industrial support to MSME and other Entreprenuers
III	I	**Financial Management**	• gain knowledge about concepts of financial management • obtain knowledge about Capital structure theories • understand the Investment decision process & its tools • understand the theories of Dividend • acquaint knowledge of Working Capital Cycle.

III	I	Marketing Managemet	- Determine the Concept of Market and Marketing and Marketing Mix - Outline the essentials of Market Segmentation and Targeting and positionaning - Correlate the drivers of pricing strategy - Determine the communication process and communication mix elements - Focus on Marketing Organization and different Control strategies
III	I	Human Resource Management	- undestand the base concept of HRM and its significance in the organisation - undestand the investment perspectives of HRM(Training and Development) - understand the concepts of Performance Appraisal: Importance – Methods – Traditional and Modern methods – Latest trends in performance appraisal - Enhanced knowledge and skills to Wage Structure- Wage and Salary Policies - Gain the knowledge on Employee Participation Schemes, Grievances and disputes resolution mechanism
III	I	Operations Management	- The Learner albe to know the basics of Production & Operations Management - Gain the knowledge on Production Planning & Control - Better understand of the Work Environment - Equip with Quality aspects of Production - Acquaint with Store Management of Production
III	I	Business Research Methodology	- Enhanced knowledge and skills to carry out research in business - Better awareness on data collection techniques,measurement and scaling - To gain knowledge in preparation and presentation of research report - Equipped students with statistical techniques - To gain knowledge in multivariate statistical techniques

IV	I	**Knowledge management**	• Describe the major roles and responsibilities in knowledge management implementations • Describe how valuable individual, group and organizational knowledge is managed throughout the knowledge management cycle • Understand and apply various success factors of knowledge management implementations • Apply appropriate systems and tools for Knowledge Mapping Techniques • Understand and apply various concepts like information technology , E-Commerce, TQM, & Benchmarking in knowledge
IV	I	**Strategic Cost Management**	• Understand the Cost management and International Issues in Cost Management • Describe the Process of Strategic Cost Audit • Equip the Strategic Cost Management & its framework • The Learner will outlines the Balanced Score Card, Strategic based responsibility accounting • Able to get knowledge on Quality aspects of Cost Management
IV	I	**Human Resource Planning**	• The learner will outline the History of HRM and HR Policies and Strategies. • The learners can list and define the Human Resource Planning role and responibilities of HR • able to understand the HRP Process outline and Productive Statistics in Micro Level HRP. • The learner can able to gain the knowledge on Recruitment Selection and Induction • can able to focus on Training and Performance Appraisal

IV	I	**Security Analysis**	• Able to understand about Investment Vs Speculation, Investment alternatives - Investment Process - Sources of Investment Information and basics of secondary markets • students has understood about Preference Shares and Equity Shares Earning valuation-Cash flow valuation,Asset Valuation , Dividend,discount model; Valuation of Bonds , Bond Returns and Risks -Bond Pricing Theorems convexity • student has got awairness on Fundamental Analysis , Economy, Industry and Company Analysis, Technical Analysis , Dow Theory, Elliot Wave Theory , Trends and Trend Reversals , Efficient Market Theory • students has understood about Risk and Returns Security Analysis, Economic Analysis , Security Analysis and Investment • Able to understnad Importance of Industry Analysis ,Classification of Industries , Key Indicators in Analysis , Analytical Frame Works
IV	I	**Leadership Management**	• Determine the meaning of leadership and its importance • Outline motivational theories and cultural dimensions • Correlate leadership with learning and attitude • Determine the factors necessary developing leadership • Focus on leadership styles in other countries
IV	I	**Banking and insurance Management**	• Understand indian financial system • Focus on indian banking practices • understand innovative banking systems in india. • Outline the indian life insurance practice • understand the concepts of LIC and GIC

IV	**I**	**Compensation and Reward management**	• able to understand the outline of compensation • able to get awareness about compensation structure • able to get the clear view about wage and salary administration • able to know about types of workers and wage analysis • to gain the knowledge about pay structure and importance tax planning in compensation structure
IV	**I**	**Advanced Management Accounting**	• Gain Knowledge on International Accounting Standards • Obtained knowledge on Analysis of Financial statements • Gain knowledge on preparation of functional budgets • Equippped with applications of marginal costing • understand applications of break even analysis
V	**I**	**Corporate Governance**	• Able to understand meaning, scope and importance of Corporate Governance • students obtained the knowledge of Board of Directors, Duties & responsibilities of auditors. • Students are able to plan and execute the models of governance, obligations towards stake holders. • Able to understand Importance of Corporate Governance & Stake holders • Able to understand the capabilities& responsibilities of directors, corporate social responsibility.
V	**I**	**Intellectual Property Rights**	• Acquainted knowledge of Laws Relating to IPR and the Agencies Responsible to IPR Registration • Gain the sound knowledge on Copyrights and Neighboring Rightsand Law Relating to Copyrights • Acquaint knowledge on Laws Relating to Patents in India,New developments in Patents. • Understood the Concep of Trademarks Claims and Infringement,Remedies. • Acquainted knowledge on Cyber Law and Cyber Crime, Liability of Network Providers.

V	I	Risk Management	• Obtain knowledge on Risk Management framework • Learner is able to understand tools of measuring Risk • Understand the Management of risk in corporate • Equip with regulatory bodies for various markets • Gain knowledge on various models of Risk management
V	I	Global Financial Management	• Obtain knowledge on Globalization & MNC's • Learner is able to understand Exchange & Interest rate exposures • Understand the Management of Global Business Operations • Equip with International Investment Decisions • Gain knowledge on Global Indebtedness
V	I	Tax Management	• Able to know the basics of Tax, Tax on agricultural income & Income Tax Act. • Understand all about the Central Value Added Tax (CENVAT) • Able to know Tax Plannings and its Principles • Learner understand the Elements of Tax considerations, tax management and tax decisions • Understand about the International Taxation system and legal aspects.
V	I	Global HRM	• To gained knowledge on the Concepts of a Global HR Perspective in New Economy- Challenges of Globalization - Implications of Managing People and Leveraging Human Resource • To attained The concepts of Strategies - International assignments forWomen Problems. • To gained knowledge in Cross Culture Communication and Negotiation, Cross CultureTeams • To understood The concepts of Compensation Management:Importance, Concepts- Trends, Issues, Methods, Factors of Consideration–Models • To gained knowledge on Analysis of Strategic Frame Work of HRD and Challenges - Globalization and Quality of Working Life and Productivity

V	**I**	**Management of Industrial Relations**	• To Understand the basics of Industrial Relations • Able to know the Trade Unions Act, 1926. • To acquaint the knowledge on Quality of Work Life. • To know the concepts of Social Security Measures in India • To understand the Employee Grievances and Seettlement of Industrial disputes.
V	**I**	**Labour Welfare Legislation**	• Obtain knowledge on Labour welfare. • Learner is able to understand Statutory & Non-statutory labour welfare programmes. • Understand the Labour Legislation. • Equip with Industrial Relations Legislation • Gain knowledge on various acts pertaining to Social Security Legislations.

Master of Computer Application

YEAR	SEMESTER	SUBJECT	Course Outcomes
I	I(R20)	**Mathematical And Statistical Foundations**	• Apply the basic rules and theorems of probability theory such as Baye's Theorem, determine probabilities that help to solve engineering problems and to determine the expectation and variance of a random variable from its distribution. • Able to perform and analyze of sampling, means, proportions, variances and estimates the maximum likelihood based on population parameters. • Learn how to formulate and test hypotheses about sample means, variances and proportions and to draw conclusions based on the results of statistical tests. • Design various ciphers using number theory. • Apply graph theory for real time problems like network routing problem.
		Computer Organization & Operating Systems	• Understand the basic organization of computer and different instruction formats and addressing modes • Analyze the concept of pipelining, segment registers and pin diagram of CPU. • Understand and analyze various issues related to memory hierarchy. • Evaluate various modes of data transfer between CPU and I/O devices. • Examine various inter connection structures of multi processors
		Data Structures	• Implement basic programs by using C concepts. • Select the data structures that efficiently

			model the information in a problem. • Assess efficiency trade-offs among different data structure implementations or combinations • Implement and know the application of algorithms for sorting and pattern matching
		Object Oriented Programming With Java	• Describe the uses OOP concepts. • Apply OOP concepts to solve real world problems. • Distinguish the concept of packages and interfaces. • Demonstrate the exception handing, multithread applications with synchronization • Design the GUI based applications using AWT and Swings • Discuss the Collection Framework
I	II(R20)	**Database Management Systems**	• Illustrate the concept of databases, database management systems, database languages, database structures and their work • Apply ER modeling and Relational modeling for designing simple databases. • • Summarize the concepts related to relational model and SQL and Write database queries using relational algebra and structured query language. • Design and develop databases from the real world by applying the concepts of Normalization. • Outline the issues associated with Transaction Management and Recovery, Tree Structured and Hash-Based Indexing
		Computer Networks	• Explain the network architecture, TCP/IP and OSI reference models.

			• Identify and understand various techniques and modes of transmission.
			• Demonstrate the data link protocols, multi-channel access protocols and IEEE 802 standards for LAN.
			• Describe routing and congestion in network layer with routing algorithms and classify IPV4 addressing scheme.
			• Discuss the elements and protocols of transport layer.
			• Develop network security and define various protocols such as FTP, HTTP, Telnet, DNS
		Software Engineering And Design Patterns	• Define various software application domains and remember different process model used in software development.
			• Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
			• Convert the requirements model into the design model and demonstrate use of software and user interface design principles.
			• Illustrate the appropriate design patterns to solve object-oriented design problems.
			• Apply structural patterns to solve design problems.
			• Evaluate the design solutions by using behavioral patterns.
		Data Warehousing And Mining	• Understand the basics of types of data, quality of data, suitable techniques required for preprocessing and measures required to perform data analysis.
			• Describe the need of classification, identify

			suitable technique(s) to perform classification, model building and evaluation.
			• Identify the requirements and usage of association rule mining on categorical and continuous data.
			• Compare and Identify suitable clustering algorithm(s) (apply with open source tools), interpret, evaluate and report the result.
			• Describe the requirements and the need of web mining
		Nosql DATABASES	• Identify what type of NoSQL database to implement based on business requirements (key-value, document, full text, graph, etc.)
			• Apply NoSQL data modeling from application specific queries.
			• Use Atomic Aggregates and denormalization as data modelling techniques to optimize query processing
II	**I(R20)**	**Machine Learning With Python**	• Illustrate and comprehend the basics of Machine Learning with Python.
			• Demonstrate the algorithms of Supervised Learning and be able to differentiate linear and logistic regressions
			• Demonstrate the algorithms of Unsupervised Learning and be able to understand the clustering algorithms.
			• Evaluate the concepts of binning, pipeline Interfaces with examples.
			• Apply the sentiment analysis for various case studies
		Internet Of Things	• Explain the definition and usage of the term 'the internet of things' in different contexts.
			• Discover the various network protocols used

			• in IoT
			• Define the role of big data, cloud computing and data analytics in a typical IoT system.
			• Compare and contrast the threat environment based on industry and/or device type.
			• Design a simple IoT system made up of sensors, wireless network connection, data analytics and display/actuators, and write the necessary control software
		Web Technologies	• Analyze a web page and identify its elements and attributes.
			• To acquire knowledge of xml fundamentals and usage of xml technology in electronic data interchange.
			• Build dynamic web pages using JavaScript (client side programming).
			• To design and develop web based enterprise systems for the enterprises using technologies like jsp, servlet.
			• Build web applications using PHP
		Cryptography And Network Security	• Explain Basic Principles, different security threats, countermeasures, foundation course of cryptography mathematics and Symmetric Encryption.
			• Classify the basic principles of Asymmetric key algorithms and operations of asymmetric key cryptography.
			• Design Cryptographic Hash Functions as SHA-3 and Digital Signatures as Elgamal.
			• Explain the concept of Revise Key Management and Distribution and User Authentication.
			• Determine the knowledge of Network and

			Internet Security Protocols such as S/MIME
		Software Project Management	- Apply the process to be followed in the software development life-cycle models. - Apply the concepts of project management & planning. - Implement the project plans through managing people, communications and change. - Conduct activities necessary to successfully complete and close the Software projects. - Implement communication, modeling, and construction & deployment practices in software development