CIVIL ENGINEERING

S.No	Courses	Course Outcomes	Blooms Taxonomy Level
SEM I	HS3152: PROFESSIONAL ENGLISH I	**CO1** To use appropriate words in a professional context	K3
		CO2 To gain understanding of basic grammatical structures and use them in right context.	K3
		CO3 To read and infer the denotative and connotative meanings of technical texts	K3
		CO4 To read and interpret information presented in tables, charts and other graphic forms	K4
		CO5 To write definitions, descriptions, narrations and essays on various topics	K6
	PH3151 : ENGINEERING PHYSICS	**CO1** Understand the importance of mechanics.	K6
		CO2 Express their knowledge in electromagnetic waves.	K1
		CO3 Demonstrate a strong foundational knowledge in oscillations, optics and lasers.	K1
		CO4 Understand the importance of quantum physics.	K2
		CO5 Comprehend and apply quantum mechanical principles towards the formation of energy bands.	K3
	CY3151 : ENGINEERING CHEMISTRY	**CO1** To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	K3
		CO2 To identify and apply basic concepts of nano science and nanotechnology in designing the synthesis of nano materials for engineering and technology applications.	K3
		CO3 To apply the knowledge of phase rule and composites for material selection requirements.	K4
		CO4 To recommend suitable fuels for engineering processes and applications.	K4
		CO5 To recognize different forms of energy resources and apply them for suitable applications in energy sectors.	K5

	MA3151 MATRICES AND CALCULUS	**CO1** Use the matrix algebra methods for solving practical problems.	K2
		CO2 Apply differential calculus tools in solving various application problems.	K4
		CO3 Able to use differential calculus ideas on several variable functions.	K5
		CO4 Apply different methods of integration in solving practical problems.	K4
		CO5 Apply multiple integral ideas in solving areas, volumes and other practical problems.	K4
	GE3151: PROBLEM SOLVING AND PYTHON PROGRAMMING	**CO1**: Develop algorithmic solutions to simple computational problems.	K1
		CO2: Develop and execute simple Python programs.	K1
		CO3: Write simple Python programs using conditionals and looping for solving problems.	K1
		CO4: Decompose a Python program into functions.	K2
		CO5: Represent compound data using Python lists, tuples, dictionaries etc.	K4
		CO6: Read and write data from/to files in Python programs.	K4
	GE3171: PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	**CO1**: Develop algorithmic solutions to simple computational problems.	K1
		CO2: Develop and execute simple Python programs.	K1
		CO3: Implement programs in Python using conditionals and loops for solving problems.	K3
		CO4: Deploy functions to decompose a Python program.	K5
		CO5: Process compound data using Python data structures.	K5
		CO6: Utilize Python packages in developing software applications.	K6
	BS3171: PHYSICS AND CHEMISTRY LABORATORY	**PHYSICS LABORATORY** **CO1**:Understand the functioning of various physics laboratory equipment.	K5
		CO2:Use graphical models to analyze laboratory data.	K4
		CO3:Use mathematical models as a medium for quantitative reasoning and describing physical reality.	K4
		CO4:Access, process and analyze scientific information.	K3
		CO5:Solve problems individually and collaboratively.	K4

		CHEMISTRY LABORATORY **CO1**:To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.	K3
		CO2:To determine the amount of metal ions through volumetric and spectroscopic techniques	K3
		CO3:To analyse and determine the composition of alloys.	K3
		CO4:To learn simple method of synthesis of nano particles	K3
		CO5:To quantitatively analyse the impurities in solution by electro analytical techniques	K3
	GE3172 : ENGLISH LABORATORY	**CO1**:To listen to and comprehend general as well as complex academic information	K5
		CO2:To listen to and understand different points of view in a discussion	K5
		CO3:To speak fluently and accurately in formal and informal communicative contexts	K5
		CO4:To describe products and processes and explain their uses and purposes clearly and accurately	K4
		CO5:To express their opinions effectively in both formal and informal discussions	K5
SE SEM II	**HS3252 PROFESSIONAL ENGLISH II**	**CO1**:To compare and contrast products and ideas in technical texts.	K3
		CO2:To identify and report cause and effects in events, industrial processes through technical texts	K5
		CO3:To analyse problems in order to arrive at feasible solutions and communicate them in the written format.	K3
		CO4:To present their ideas and opinions in a planned and logical manner	K5
		CO5:To draft effective resumes in the context of job search.	K4
	MA3251 :STATISTICS AND NUMERICAL METHODS	**CO1**:Apply the concept of testing of hypothesis for small and large samples in real life problems.	K4
		CO2:Apply the basic concepts of classifications of design of experiments in the field of agriculture.	K4
		CO3:Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.	K4
		CO4:Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	K5
		CO5:Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	K5

	PH3201:PHYSICS FOR CIVIL ENGINEERING	**CO1** acquire knowledge about heat transfer through different materials, thermal performance of building and thermal insulation.	K5
		CO2 gain knowledge on the ventilation and air conditioning of buildings	K6
		CO3 understand the concepts of sound absorption, noise insulation and lighting designs	K5
		CO4 now about the processing and applications of composites, metallic glasses, shape memory alloys and ceramics	K5
		CO5 get an awareness on natural disasters such as earth quake, cyclone, fire and safety measures	K5
	BE3252:BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING	**CO1**: Compute the electric circuit parameters for simple problems	K1
		CO2: Explain the concepts of domestics wiring and protective devices	K4
		CO3: Explain the working principle and applications of electrical machines	K4
		CO4: Analyze the characteristics of analog electronic devices	K3
		CO5: Explain the types and operating principles of sensors and transducers	K5
	GE3251:ENGINEERING GRAPHICS	**CO1**:Use BIS conventions and specifications for engineering drawing.	K4
		CO2:Construct the conic curves, involutes and cycloid.	K4
		CO3:Solve practical problems involving projection of lines.	K4
		CO4:Draw the orthographic, isometric and perspective projections of simple solids	K4
		CO5:Draw the development of simple solids.	K4
	GE3271:ENGINEERING PRACTICES LABORATORY	**CO1**:Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.	K4
		CO2:Wire various electrical joints in common household electrical wire work.	K3
		CO3:Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.	K3
		CO4:Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.	K4

SEM III	**BE3272:BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY**	**CO1**: Use experimental methods to verify the Ohm's law and Kirchhoff's Law and to measure three phase power	K4
		CO2: Analyze experimentally the load characteristics of electrical machines	K3
		CO3: Analyze the characteristics of basic electronic devices	K3
		CO4: Use LVDT to measure displacement	K4
	GE3272:COMMUNICATION LABORATORY	**CO1**:Speak effectively in group discussions held in formal/semi formal contexts.	K5
		CO2:Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	K5
		CO3:Write emails, letters and effective job applications.	K4
		CO4:Write critical reports to convey data and information with clarity and precision	K4
		CO5:Give appropriate instructions and recommendations for safe execution of tasks	K5
	ME3351 : ENGINEERING MECHANICS	**CO1** Illustrate the vectorial and scalar representation of forces and moments	K5
		CO2 Analyse the rigid body in equilibrium	K3
		CO3 Evaluate the properties of distributed forces	K4
		CO4 Determine the friction and the effects by the laws of friction	K4
		CO5 Calculate dynamic forces exerted in rigid body	K4
	MA3351:TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	**CO1**:Understand how to solve the given standard partial differential equations.	K5
		CO2:Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.	K5
		CO3:Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.	K4
		CO4:Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.	K4
		CO5:Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.	K4

	CE3301 : FLUID MECHANICS	**CO1** Demonstrate the difference between solid and fluid, its properties and behaviour in static conditions.	K5
		CO2 Apply the conservation laws applicable to fluids and its application through fluid kinematics and dynamics.	K4
		CO3 Formulate the relationship among the parameters involved in the given fluid phenomenon and to predict the performance of prototypes by model studies.	K4
		CO4 Estimate the losses in pipelines for both laminar and turbulent conditions and analysis of pipes connected in series and parallel.	K5
		CO5 Explain the concept of boundary layer and its application to find the drag force excreted by the fluid on the flat solid surface.	K5
	CE3302: CONSTRUCTION MATERIALS AND TECHNOLOGY	**CO1** Identify the good quality brick, stone and blocks for construction	K3
		CO2 Recognize the market forms of timber, steel, aluminum and applications of various composite materials	K3
		CO3 Identify the best construction and service practices such as thermal insulations and air conditioning of the building	K3
		CO4 Select various equipments for construction works conditioning of building	K3
		CO5 Understand the construction planning and scheduling techniques	K5
	CE3303: WATER SUPPLY AND WASTEWATER ENGINEERING	**CO1** Understand the various components of water supply scheme and design of intake structure and conveyance system for water transmission	K1
		CO2 Understand on the characteristics and composition of sewage, ability to estimate sewage generation and design sewer system including sewage pumping stations	K1
		CO3 Understand the process of conventional treatment and design of water and wastewater treatment system and gain knowledge of selection of treatment process and biological treatment process	K1
		CO4 Ability to design and evaluate water distribution system and water supply in buildings and understand the self-purification of streams and sludge and seepage disposal methods.	K1
		CO5 Able to understand and design the various advanced treatment system and knowledge about the recent advances in water and wastewater treatment process and reuse of sewage	K1
	CE3351 : SURVEYING AND LEVELLING	**CO1** Introduce the rudiments of various surveying and its principles	K5
		CO2 Imparts knowledge in computation of levels of terrain and ground features	K5

		CO3 Imparts concepts of Theodolite Surveying for complex surveying operations	K5
		CO4 Understand the procedure for establishing horizontal and vertical control	K5
		CO5 Imparts the knowledge on modern surveying instruments	K5
	CE3361: SURVEYING AND LEVELLING LABORATORY	**CO1** Impart knowledge on the usage of basic surveying instruments like chain/tape, compass and levelling instruments	K5
		CO2 Able to use levelling instrument for surveying operations	K4
		CO3 Able to use theodolite for various surveying operations	K4
		CO4 Able to carry out necessary surveys for social infrastructures	K4
		CO5 Able to prepare planimetric maps	K4
	CE3311 : WATER AND WASTEWATER ANALYSIS LABORATORY	**CO1** Calibrate and standardize the equipment	K4
		CO2 Collect proper sample for analysis	K3
		CO3 To know the sample preservation methods	K3
		CO4 To perform field oriented testing of water, wastewater	K3
		CO5 To perform coliform analysis	K3
	GE3361: PROFESSIONAL DEVELOPMENT	**CO1** Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements	K4
		CO2 Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding	K4
		CO3 Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.	K4
SEM IV	**CE3401 APPLIED HYDRAULICS ENGINEERING**	**CO1** Describe the basics of open channel flow, its classification and analysis of uniform flow in steady state conditions with specific energy concept and its application.	K5
		CO2 Analyse steady gradually varied flow, water surface profiles and its length calculation using direct and standard step methods with change in water surface profiles due to change in	K3

		grades.	
		CO3 Derive the relationship among the sequent depths of steady rapidly varied flow and estimating energy loss in hydraulic jump with exposure to positive and negative surges	K5
		CO4 Design turbines and explain the working principle	K1
		CO5 Differentiate pumps and explain the working principle with characteristic curves and design centrifugal and reciprocating pumps.	K3
	CE3402 : STRENGTH OF MATERIALS	**CO1** Understand the concepts of stress and strain, principal stresses and principal planes.	K5
		CO2 Determine Shear force and bending moment in beams and understand concept of theory of simple bending.	K2
		CO3 Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.	K5
		CO4 Analyze propped cantilever, fixed beams and continuous beams for external loadings and support settlements.	K4
		CO5 Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and study the various theories of failure	K5
	CE3403 : CONCRETE TECHNOLOGY	**CO1** Understand the requirements of cement, aggregates and water for concrete	K5
		CO2 Select suitable admixtures for enhancing the properties of concrete	K5
		CO3 Design concrete mixes as per IS method of mix design	K1
		CO4 Determine the properties of concrete at fresh and hardened state.	K2
		CO5 Know the importance of special concretes for specific requirements	K5
	CE3404: SOIL MECHANICS	**CO1** Demonstrate an ability to identify various types of soils and its properties, formulate and solve engineering Problems	K5
		CO2 Show the basic understanding of flow through soil medium and its impact of engineering solution	K3
		CO3 Understand the basic concept of stress distribution in loaded soil medium and soil settlement due to consolidation	K5
		CO4 Show the understanding of shear strength of soils and its impact of engineering solutions to the loaded soil medium and also will be aware of contemporary issues on shear strength of	K3

		soils.	
		CO5 Demonstrate an ability to design both finite and infinite slopes, component and process as per needs and specifications.	K3
	CE3405: HIGHWAY AND RAILWAY ENGINEERING	**CO1** Plan a highway according to the principles and standards adopted in various institutions in India	K1
		CO2 Design the geometric features of road network and components of pavement.	K1
		CO3 Test the highway materials and construction practice methods and know its properties and able to perform pavement evaluation and management.	K4
		CO4 Understand the methods of route alignment and design elements in railway planning and constructions.	K5
		CO5 Understand the construction techniques and maintenance of track laying and railway stations	K5
	GE3451 :ENVIRONMENTAL SCIENCES AND SUSTAINABILITY	**CO1** To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation	K5
		CO2 To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	K3
		CO3 To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	K3
		CO4 To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.	K4
		CO5 To inculcate and embrace sustainability practices and develop a broader understanding on green materials, energy cycles and analyze the role of sustainable urbanization.	K4
	CE3411 : HYDRAULIC ENGINEERING LABORATORY	**CO1** Apply Bernoulli equation for calibration of flow measuring devices.	K4
		CO2 Measure friction factor in pipes and compare with Moody diagram	K3
		CO3 Determine the performance characteristics of rotodynamic pumps	K3
		CO4 Determine the performance characteristics of positive displacement pumps.	K3
		CO5 Determine the performance characteristics of turbines.	K3

	CE3412 : MATERIALS TESTING LABORATORY	**CO1** Determine the mechanical properties of steel.	K3
		CO2 Determine the physical properties of cement	K3
		CO3 Determine the physical properties of fine and coarse aggregate.	K3
		CO4 Determine the workability and compressive strength of concrete.	K3
		CO5 Determine the strength of brick and wood.	K3
		CO1 Conduct tests to determine the index properties of soils	K4
		CO2 Determine the insitu density and compaction characteristics.	K3
		CO3 Conduct tests to determine the compressibility, permeability and shear strength of soils.	K4
		CO4 Understand the various tests on Geo synthetics.	K4
SEM V	**CE3501: DESIGN OF REINFORCED CONCRETE STRUCTURAL ELEMENTS**	**CO1** Know the various design concepts and design RC rectangular beams by working stress and limit state methods	K5
		CO2 Understand the design of flanged beams, design for shear and torsion, and anchorage and development length.	K5
		CO3 Design a RC slabs and staircase and draw the reinforcement detailing.	K1
		CO4 Design short columns for axial, uni-axial and bi-axial eccentric loadings	K1
		CO5 Design wall footings, isolated footings and combined rectangular footing.	K1
	CE3502: STRUCTURAL ANALYSIS I	**CO1** Analyze the pin-jointed plane and space frames.	K3
		CO2 Analyse the continuous beams and rigid frames by slope defection method.	K3
		CO3 Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.	K5
		CO4 Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.	K3

		CO5 Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.	K5
	CE3503: FOUNDATION ENGINEERING	**CO1** Graduate will demonstrate an ability to plan and execute a detailed site investigation to select geotechnical design parameters and type of foundation	K1
		CO2 Graduate will demonstrate an ability to design shallow foundations, its component or process as per the needs and specifications.	K1
		CO3 Graduate will demonstrate an ability to design combined footings and raft foundations, its component or process as per the needs and specifications.	K1
		CO4 Graduate will demonstrate an ability to design deep foundations, its component or process as per the needs and specifications.	K1
		CO5 Graduate will demonstrate an ability to design retaining walls, its component or process as per the needs and specifications.	K1
	CE3025: AIRPORTS AND HARBOURS	**CO1** Gain an insight on the planning and site selection of Airport Planning and design.	K1
		CO2 Knowledge on Design of various Airport components	K1
		CO3 Analyze and design the elements for orientation of runways and passenger facility systems.	K1
		CO4 Understand the various features in Harbours and Ports, their construction, coastal protection works	K5
		CO5 Knowledge on various Environmental Regulations and Acts	K5
	CCE331: AIR AND NOISE POLLUTION CONTROL ENGINEERING	**CO1** Understand various types and sources of air pollution and its effects	K5
		CO2 Know the dispersion of air pollutants and their modeling	K5
		CO3 Know about the principles and design of control of particulate pollutants	K5
		CO4 Understand the principles and design of control of gaseous pollutant	K5
		CO5 Know the sources, effects and control of vehicular, indoor air and noise pollution	K5
	CE3003: PREFABRICATED STRUCTURES	**CO1** Understand concepts about principles of prefabrication, production, transportation, erection.	K5

		CO2 Acquire knowledge about panel systems, slabs, beams, shear walls and columns used in precast construction.	K3
		CO3 Acquire knowledge about design of cross section, joint flexibility.	K3
		CO4 Acquire knowledge about joints and connection in precast construction.	K3
		CO5 Acquire knowledge about structural stability.	K3
	CE3511: HIGHWAY ENGINEERING LABORATORY	**CO1** Characterize Pavement Aggregate through relevant test	K5
		CO2 Ascertain the Quality of Bitumen.	K5
		CO3 Determine the Optimum Binder Content Using Marshall Method.	K3
		CO4 Evaluate the Consistency and Properties of Bitumen.	K3
		CO5 Determine the Bitumen Content in the Bituminous Mixes	K3
		CO1 Handle the modern surveying instruments like Total station and GPS	K5
		CO2 Apply modern surveying techniques in field to establish horizontal control.	K4
		CO3 Understand the surveying techniques in field to establish vertical control	K5
		CO4 Apply different survey adjustment techniques.	K4
		CO5 Carry out different setting out works in the field	K3
SEM VI	**CE3601: DESIGN OF STEEL STRUCTURAL ELEMENTS**	**CO1** Recognize the design philosophy of steel structures and identify the different failure modes of bolted and welded connections, and determine their design strengths.	K1
		CO2 Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria	K1
		CO3 Apply the principles, procedures and current code requirements to the analysis and design of steel tension members, columns, column bases and beams	K4
		CO4 Identify and compute the design loads on Industrial structures, and gantry girder	K4

		CO5 Find out ultimate load of steel beams and portal frames using plastic analysis	K4
	CE3602: STRUCTURAL ANALYSIS II	**CO1** Draw influence lines for statically determinate structures and calculate critical stress resultants.	K4
		CO2 Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.	K5
		CO3 Analyse three hinged, two hinged and fixed arches.	K3
		CO4 Analyse the suspension bridges with stiffening girders	K3
		CO5 Analyse HYD rigid frames by approximate methods for gravity and horizontal loads	K3
	AG3601: ENGINEERING GEOLOGY	**CO1** Knowing the internal structure of earth and its relation to earthquakes. Landforms created by various geological agents and their importance in civil engineering.	K5
		CO2 Getting knowledge on various minerals and rocks that can be used as construction materials and road aggregates. In addition, testing the suitability of rocks for foundation purposes.	K5
		CO3 Studying various geological structures and their impact in engineering constructions. Further, learning the geomechanical properties of rocks and their significance in engineering projects.	K5
		CO4 Gaining knowledge on the role of geological mapping, remote sensing and geophysics for surface and subsurface investigations. In addition, students will also gain knowledge on borehole logging techniques and their applications in civil engineering.	K5
		CO5 Applying geological knowledge for designing and constructing major civil engineering structures, and also mitigating various geological hazards such as earthquakes, landslides and tsunamis.	K4
	CE3005: REHABILITATION/HERITAGE RESTORATION	**CO1** Know the importance of inspection and maintenance.	K5
		CO2 Study the Impacts of cracks, corrosion and climate on structures.	K5
		CO3 Know about various special concretes	K5
		CO4 Understand the testing techniques and various protection measures	K5
		CO5 Know the Repair of structures and Restoration of Heritage structures	K5

	CE3013: ADVANCED CONSTRUCTION TECHNIQUES	**CO1** Understand the modern construction techniques used in the sub structure construction.	K5
		CO2 Demonstrate knowledge and understanding of the principles and concepts relevant to super structure construction for buildings	K5
		CO3 Understand the concepts used in the construction of special structures	K5
		CO4 Knowledge on Various strengthening and repair methods for different cases.	K5
		CO5 Identify the suitable demolition technique for demolishing a building.	K5
	OCS351: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FUNDAMENTALS	**CO1**: Understand the foundations of AI and the structure of Intelligent Agents	K5
		CO2: Use appropriate search algorithms for any AI problem	K4
		CO3: Study of learning methods	K5
		CO4: Solving problem using Supervised learning	K5
		CO5: Solving problem using Unsupervised learning	K5
	CE3611: BUILDING DRAWING AND DETAILING LABORATORY	**CO1** Draft the plan, elevation and sectional view of the load bearing and framed buildings	K3
		CO2 Draw the structural detailing of RCC elements	K3
		CO3 Draw the structural detailing of RCC water tanks, footings and retaining walls	K3
		CO4 Draw the structural detailing of steel structures	K3
		CO5 Draft the structural detailing of Industrial structures	K3
SEM VII	**CE3701: ESTIMATION, COSTING AND VALUATION ENGINEERING**	**CO1** Gain knowledge on types of contracts	K5
		CO2 Understand types of specifications, principles for report preparation, tender notices types.	K5
		CO3 Rate Analysis for all Building works, canals, and Roads and Cost Estimate.	K3
		CO4 Estimate the quantities for buildings.	K4
		CO5 Evaluate valuation for building and land.	K4

	AI3404: HYDROLOGY AND WATER RESOURCES ENGINEERING	**CO1**. Define the hydrological processes and their integrated behaviour in catchments	K5
		CO2. Apply the knowledge of hydrological processes to address basin characteristics, runoff and hydrograph	K4
		CO3. Explain the concept of hydrological extremes and its management strategies	K5
		CO4. Describe the principles of storage reservoirs	K5
		CO5. Understand and apply the concepts of groundwater management	K5
	GE3791: HUMAN VALUES AND ETHICS	**CO1**: Identify the importance of democratic, secular and scientific values in harmonious functioning of social life	K5
		CO2: Practice democratic and scientific values in both their personal and professional life.	K5
		CO3: Find rational solutions to social problems.	K5
		CO4: Behave in an ethical manner in society	K5
		CO5: Practice critical thinking and the pursuit of truth.	K5
	GE3752: TOTAL QUALITY MANAGEMENT	**CO1**: Ability to apply TQM concepts in a selected enterprise.	K4
		CO2: Ability to apply TQM principles in a selected enterprise.	K4
		CO3: Ability to understand Six Sigma and apply Traditional tools, New tools, Benchmarking and FMEA.	K5
		CO4: Ability to understand Taguchi's Quality Loss Function, Performance Measures and apply QFD, TPM, COQ and BPR.	K5
		CO5: Ability to apply QMS and EMS in any organization.	K4
	OCS352: IOT CONCEPTS AND APPLICATIONS	**CO1**:Explain the concept of IoT.	K5
		CO2:Understand the communication models and various protocols for Io T.	K5
		CO3:Design portable Io T using Arduino /Raspberry Pi /open platform	K1
		CO4:Apply data analytics and use cloud offerings related to Io T.	K4

SEM VIII		**CO5**:Analyze applications of IoT in real time scenario.	K3
	OFD354: FUNDAMENTALS OF FOOD ENGINEERING	**CO1** understand the importance of food polymers	K5
		CO2 understand the effect of various methods of processing on the structure and texture of food materials	K5
		CO3 understand the interaction of food constituents with respect to thermal, electrical properties to develop new technologies for processing and preservation.	K5
	OAI351: URBAN AGRICULTURE	**CO1** Demonstrate the principles behind crop production and various parameters that influences the crop growth on roof tops	K5
		CO2 Explain different methods of crop production on roof tops	K5
		CO3 Explain nutrient and pest management for crop production on roof tops	K5
		CO4 Illustrate crop water requirement and irrigation water management on roof tops	K5
		CO5 Explain the concept of waste management on roof tops	K5
	CE3811 PROJECT WORK	On Completion of the project works students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology. **CO1** Identify civil engineering problems reviewing available literature.	K5
		CO2 Identify appropriate techniques to analyze complex civil engineering problems.	K3
		CO3 Apply engineering and management principles through efficient handling of Project have a clear idea of his/her area of work and they are in a position to carry out the work in a systematic way.	K4