ESHAN COLLEGE OF ENGINEERING, FARAH, MATHURA

Department of Civil Engineering (CE)

Programme: B.Tech. Civil Engineering (CE)

CO	Course Code/Course Name/ Course Outcome (CO)	Programme Outcome (PO)												Programme Specific Outcome (PSO)	
	KAS303 : Maths-III	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Remember the concept of Laplace transform and apply in solving real life problems	3	2	2	2										1
CO2	Understand the concept of Fourier and Z – transform to evaluate engineering problems	3	2	2	2										1
CO3	Remember the concept of Formal Logic, Group and Rings to evaluate real life problems	3	2	2	2										1
CO4	Apply the concept of Set, Relation, function and Counting Techniques	2	2	3	3										1
CO5	Apply the concept of Lattices and Boolean Algebra to create Logic Gates and Circuits, Truth Table, Boolean Functions, Karnaugh Maps	2	2	3	3										1
	Target Outcome (Average) PO	2.6	2	2.4	2.4										1

	KOE038/48 : Electronics Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the concept of PN junction and special purpose diodes	1	2	2	2	2									2
CO2	Study the application of conventional diode and semiconductor diode	1	3	2	2	2									2
CO3	Analyze the I-V characteristics of BJT and FET		3	3	3	3									2
CO4	Analyze the of Op-Amp, amplifiers, integrator, and differentiator		3	3	3	3									2
CO5	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope	1	3	3	3	3									2
	Target Outcome (Average) PO	1	2.8	2.6	2.6	2.6									2

	KAS 301: Technical Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the nature and objective of Technical Communication relevant for the work place as Engineers										3		1		2
CO2	Utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions										3		1		2
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience					2					3		1		2
CO4	Have a vast know-how of the application of the learning to promote their technical competence										3		1		2
CO5	Evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics					2					3		1		2
	Target Outcome (Average) PO					2					3		1		2

	KVE301 : Universal Human Values and Professional Ethics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand value inputs, need, basic guidelines, content and process of value education in current scenario of the society						2	1	3				1		
CO2	Understand the meaning of Harmony in the Self the Co-existence of Self and Body						2	1	3				1		
CO3	Understand the value of harmony in human-human relationships and explore their role in ensuring a harmonious society						2	1	3				1		
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature						2	1	3				1		
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment during work						2	1	3				1		
	Target Outcome (Average) PO						2	1	3				1		

	KCE301 : Engineering Mechanics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Use scalar and vector analytical techniques for analyzing forces in statically determinate structures	3	3	2	2									3	1
CO2	Apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems	2	3	3	3									3	1
CO3	Apply basic knowledge of mathematics and physics to solve real-world problems	2	3	3	3									3	1
CO4	Understand basic dynamics concepts – force, momentum, work and energy	3	3	3	2									3	1
CO5	Understand and be able to apply Newton's laws of motion	3	3	3	2									3	1
	Target Outcome (Average) PO	2.6	3	2.8	2.4									3	1

	KCE302 : Surveying & Geomatics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the function of surveying and work with survey instruments, take observations, and prepare plan, profile, and cross-section and perform calculations.	3	3	2	2									3	1
CO2	Calculate, design and layout horizontal and vertical curves.	2	3	3	3									3	1
CO3	Operate a total station and GPS to measure distance, angles, and to calculate differences in elevation. Reduce data for application in a geographic information system.	3	3	3	3	2								3	
CO4	Relate and apply principles of photogrammetry for surveying	3	2	2	2									3	
CO5	Apply principles of Remote Sensing and Digital Image Processing for Civil Engineering problems	2	3	3	3									3	
	Target Outcome (Average) PO	2.6	2.8	2.6	2.6	2								3	

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	KCE303 : Fluid Mechanics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the broad principles of fluid statics, kinematics and dynamics	3	3	2	2									3	1
CO2	Understand definitions of the basic terms used in fluid mechanics	3	3	2	2									2	1
CO3	Understand classifications of fluid flow	3	3	2	2									3	1
CO4	Apply the continuity, momentum and energy principle	2	2	3	3									2	1
CO5	Apply dimensional analysis	2	2	3	3									3	1
	Target Outcome (Average) PO	2.6	2.6	2.4	2.4									2.6	1

	KCE351 : Building Planning and Drawing Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the principles of planning and bye-laws (National building code) used for building planning		3	3	3	2				2				2	1
CO2	Draft the plan, elevation and sectional views of the buildings using AutoCAD		3	3	3	3				2				3	1
	Target Outcome (Average) PO		3	3	3	2.5				2				2.5	1

	KCE352 : Surveying and Geomatics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate and handle various conventional surveying instruments such as chain/tape, compass, theodolite, auto-level in the field of civil engineering applications such as highway profiling, setting out curves etc		3	3	3	2				2				3	1
CO2	Measure distances, horizontal & vertical angles and coordinates using electronic total station		3	3	3	3				2				3	1
CO3	Apply the principles of photogrammetric surveying and take observations using mirror stereoscope and parallax bar		3	3	3	3				2				3	1
CO4	Measure coordinates using GPS and understand digitization using GIS and visual interpretation of standard FCC		3	3	3	3				2				3	1
	Target Outcome (Average) PO		3	3	3	2.75				2				3	1

	KCE353 : Fluid Mechanics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Evaluate Bernaulli's Theorem & Momentum equation in pipe flow		3	3	3	2				2				3	1
CO2	Apply continuity equation and flow visualisation in pipe flow		3	3	3	2				2				2	1
CO3	Verify the concept of buoyancy and hence metacentre point		3	3	3	2				2				3	1
CO4	Illustrate the concept of wind tunnel		3	3	3	1				2				3	1
	Target Outcome (Average) PO		3	3	3	1.75				2				2.75	1

	KCE354 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand a system, component or process to meet desired progress of project		3	3	3					2		3	1	3	2
CO2	Prepare Project Report for a project in Civil Engineering domain		3	3	3	2				2		3	1	3	2
	Target Outcome (Average) PO		3	3	3	2				2		3	1	3	2

	KNC301 : Computer System Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats		3	3	2	2			1				1		2
CO2	Discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats		3	3	2	2			1				1		2
CO3	Discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques		3	3	2	2			1				1		2
CO4	Articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios		3	3	2	2			1				1		2
CO5	Articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques		3	3	1	2			1				1		2
	Target Outcome (Average) PO		3	3	1.8	2			1				1		2

	KNC302 : Pyhon Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Read and write simple Python programs		3	3	3	3									2
CO2	Develop Python programs with conditionals and loops		3	3	3	3									2
CO3	Define Python functions and to use Python data structures – lists, tuples, dictionaries		3	3	3	3									2
CO4	Do input/output with files in Python		3	3	3	3									2
CO5	Do searching, sorting and merging in Python		3	3	3	3									2
	Target Outcome (Average) PO		3	3	3	3									2

	KAS403 : Mathematics-III	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Remember the concept of Laplace transform and apply in solving real life problems	3	1	3	1										2
CO2	Understand the concept of Fourier and Z – transform to evaluate engineering problems	3	1	3	1										2
CO3	Remember the concept of Formal Logic, Group and Rings to evaluate real life problems	3	1	3	1										2
CO4	Apply the concept of Set, Relation, function and Counting Techniques	3	1	3	1										2
CO5	Apply the concept of Lattices and Boolean Algebra to create Logic Gates and Circuits, Truth Table, Boolean Functions, Karnaugh Maps	3	1	3	1										2
	Target Outcome (Average) PO	3	1	3	1										2

	KVE401 : Universal Human Values	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society						2	1	3				2		
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body						2	1	3				2		
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society						2	1	3				2		
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature						2	1	3				2		
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work						2	1	3				2		

	Target Outcome (Average) PO					2	1	3				2			

	KAS401 : Technical Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the nature and objective of Technical Communication relevant for the work place as Engineers					2					3		1		1
CO2	Utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions					2					3		1		1
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience					2					3		1		1
CO4	Have a vast know-how of the application of the learning to promote their technical competence					2					3		1		1
CO5	To evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics					2					3		1		1
	Target Outcome (Average) PO					2					3		1		1

	KCE401 : Material Testing & Construction Practices	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify various building materials and to understand their basic properties.	2	3	3	3							2		3	2
CO2	Understand the use of non-conventional civil engineering materials.	3	3	3	3							2		3	2
CO3	Study suitable type of flooring and roofing in the construction process	2	3	3	3	2						2		3	2
CO4	Characterize the concept of plastering, pointing and various other building services.	3	3	3	3	2						2		3	2
CO5	Exemplify the various fire protection, sound and thermal insulation techniques, maintenance and repair of buildings.	2	3	3	3							2		3	2
	Target Outcome (Average) PO	2.4	3	3	3	2						2		3	2

	KCE402 : Introduction To Solid Mechanics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the concepts and principles of stresses and strains	3	3	2	2									2	1
CO2	Analyze solid mechanics problems using classical methods and energy methods	2	3	3	3									1	1
CO3	Analyze structural members subjected to combined stresses	2	3	3	3									1	2
CO4	Calculate the deflections at any point on a beam subjected to a combination of loads	2	3	3	3									1	2
CO5	Understand the behavior of columns, springs and cylinders against loads.	3	3	3	3									3	2
	Target Outcome (Average) PO	2.4	3	2.8	2.8									1.6	1.6

	KCE403 : Hydraulics Engineering & Machines	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Solve problems related to free surface flow in an open channel	3	3	3	3									3	2
CO2	Apply energy depth relationships for gradually varied flow in steady state conditions	3	3	3	3									3	2
CO3	Apply the concept of Rapidly Varied Flow in Open Channel Flow in steady state conditions	3	3	3	3									3	2
CO4	Explain the working principle, operation, and performance of pumps	3	3	3	3									3	2
CO5	Summarize the working principle of hydraulic turbines and their characteristics	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE451 : Material Testing Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Determine the quality of bricks, cement, fine aggregate and coarse aggregate and its suitability for construction purpose		3	3	3									2	2
CO2	Design the mix, make the specimens and test the same for the strength for comparison with design strength		3	3	3									2	2
CO3	Develop ability to function as a member of a team to complete the assigned task		3	3	3									2	2
	Target Outcome (Average) PO		3	3	3									2	2

	KCE452 : Solid Mechanics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Verify the deflection in different structural members by using apparatus		3	3	3									2	2
CO2	Determine the engineering properties of solid Materials		3	3	3									2	2
CO3	Explain the behaviour of beams and columns under different end conditions		3	3	3									2	2
	Target Outcome (Average) PO		3	3	3									2	2

	KCE453 : Hydraulics & Hydraulic Machine Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Investigate flow characteristics and various parameters for open channel		3	3	3									3	2
CO2	Assess the performance of pumps and turbines		3	3	3									3	2
	Target Outcome (Average) PO		3	3	3									3	2

	KNC402 : Python Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Read and write simple Python programs		3	3	3	3									2
CO2	Develop Python programs with conditionals and loops		3	3	3	3									2
CO3	Define Python functions and to use Python data structures – lists, tuples, dictionaries		3	3	3	3									2
CO4	Do input/output with files in Python		3	3	3	3									2
CO5	Do searching, sorting and merging in Python		3	3	3	3									2
	Target Outcome (Average) PO		3	3	3	3									2

	KNC401 : Computer System Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats					3			1				1		2
CO2	Discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats					3			1				1		2
CO3	Discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques					3			1				1		2
CO4	Articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios					3			1				1		2

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CO5	Articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques					3			1				1		2
	Target Outcome (Average) PO					3			1				1		2

	KCE501 : Geotechnical Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Classify the soil and determine its Index properties	3	3	3	3									3	2
CO2	Evaluate permeability and seepage properties of soil	3	3	3	3									3	2
CO3	Interpret the compaction and consolidation characteristics & effective stress concept of soil	3	3	3	3									3	2
CO4	Determine the vertical and shear stress under different loading conditions and explain the phenomenon of soil liquefaction.	3	3	3	3									3	2
CO5	Interpret the earth pressure and related slope failures	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE502 : Structural Analysis	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain type of structures and method for their analysis	3	3	3	3									1	2
CO2	Analyze different types of trusses for member forces	3	3	3	3									3	2
CO3	Compute slope and deflection in determinate structures using different methods	3	3	3	3									3	2
CO4	Apply the concept of influence lines and moving loads to compute bending moment and shear force at different sections	3	3	3	3									3	2
CO5	Analyze determinate arches for different loading conditions	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									2.6	2

	KCE503 : Quantity Estimation and Construction Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the importance of units of measurement and preliminary estimate for administrative approval of projects	3	3	3	3							3		3	2
CO2	Understand the contracts and tender documents in construction projects	3	3	3	3							3		2	2
CO3	Analyze and assess the quantity of materials required for civil engineering works as per specifications	3	3	3	3							3		3	2
CO4	Evaluate and estimate the cost of expenditure and prepare a detailed rate analysis report	3	3	3	3							3		2	2
CO5	Analyze and choose cost effective approach for civil engineering projects	3	3	3	3							3		3	2
	Target Outcome (Average) PO	3	3	3	3							3		2.6	2

	KCE051 : Department Elective-I (Concrete Technology)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the properties of constituent material of concrete	3	3	3	3									3	2
CO2	Apply admixtures to enhance the properties of concrete	3	3	3	3									3	2
CO3	Evaluate the strength and durability parameters of concrete	3	3	3	3									3	2
CO4	Design the concrete mix for various strengths using difference methods	3	3	3	3									3	2
CO5	Use advanced concrete types in construction industry	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE055 : Department Elective-II (Engineering Hydrology)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the basic concept of hydrological cycle and its various phases	3	3	3	3									3	2
CO2	Understand the concept of runoff and apply the knowledge to construct the hydrograph	3	3	3	3									3	2
CO3	Apply the various methods to assess the flood	3	3	3	3									3	2
CO4	Assess the quality of various forms of water and their aquifer properties	3	3	3	3									3	2
CO5	Understand the well hydraulics and apply ground water modelling techniques	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE551 : CAD Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand latest software tools in analysis and design of civil engineering		3	3	3	3				2	1			3	2
CO2	Apply software tools for geotechnical engineering purpose		3	3	3	3				2	1			3	2
CO3	Apply software tools for surveying		3	3	3	3				2	1			3	2
	Target Outcome (Average) PO		3	3	3	3				2	1			3	2

	KCE552 : Geotechnical Engineering Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Determine index properties of soil sample		3	3	3					2				3	2
CO2	Classify the soils on the basis of standards		3	3	3					2				3	2
CO3	Determine permeability and compaction characteristics of soil		3	3	3					2				3	2
CO4	Assess shear strength parameters of soil samples		3	3	3					2				3	2
	Target Outcome (Average) PO		3	3	3					2				3	2

	KCE553 : Quantity Estimation and Management Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Estimate the quantities for projects of civil engineering domain	3	3	3	3					2		3		2	2
CO2	Prepare Bill of Quantities (BOQ) for projects undertaken	3	3	3	3					2		3		2	2
CO3	Practice on project management software to manage the projects	3	3	3	3					2		3		2	2
CO4	Have knowledge to study the tender documents	3	3	3	3					2		3		2	2
	Target Outcome (Average) PO	3	3	3	3					2		3		2.25	2

	KCE554 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

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CO1	Compose project report for a project in civil engineering domain	3	3	3	3					2		3	1	3	2
CO2	Design a system, component or process to meet desired progress of project	3	3	3	3					2		3	1	3	2
CO3	Formulate solution to the different civil engineering projects	3	3	3	3					2		3	1	3	2
	Target Outcome (Average) PO	3	3	3	3					2		3	1	3	2

	KNC501 : Constitution of India, Law and Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify and explore the basic features and modalities about Indian constitution						2		2				2		
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level						2		2				2		
CO3	Differentiate different aspects of Indian Legal System and its related bodies						2		2				2		
CO4	Discover and apply different laws and regulations related to engineering practices						2		2				2		
CO5	Correlate role of engineers with different organizations and governance models						2		2				2		
	Target Outcome (Average) PO						2		2				2		

	KNC502 : Indian Tradition, Culture and Society	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand, connect up and explain basics of Indian Traditional knowledge modern scientific perspective						2	1	2				2		1
CO2	Have basic principles of thought process, reasoning and inference to identify the roots and details of contemporary issues faced by our nation and will try to locate possible solutions to these challenges						2	1	2				2		1
CO3	Understand the importance of our surroundings and encouragement to contribute towards sustainable development						2	1	2				2		1
CO4	Awareness of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions						2	1	2				2		1
CO5	Knowledge of Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system						2	1	2				2		1
	Target Outcome (Average) PO						2	1	2				2		1

	KCE601 : Design of Concrete Structure	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze and Design RCC beams for flexure by IS methods	3	3	3	3									3	2
CO2	Analyze and Design RCC beams for shear by IS method	3	3	3	3									3	2
CO3	Analyze and Design RCC slabs and staircase by IS methods	3	3	3	3									3	2
CO4	Design the RCC compression members by IS methods	3	3	3	3									3	2
CO5	Design various types of footings and cantilever retaining wall	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE602 : Transportation Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the history of road development, their alignment & Survey	3	3	3	3									3	2
CO2	Design the various geometric parameters of road	3	3	3	3									3	2
CO3	Study the traffic characteristics & design of road intersections & signals	3	3	3	3									3	2
CO4	Examine the properties of highway materials & their implementation in design of pavements	3	3	3	3									3	2
CO5	Learn methods to construct various types of roads	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE603 : Environmental Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Assess water demand and optimal size of water mains	3	3	3	3			3					2	3	2
CO2	Layout the distribution system & assess the capacity of reservoir	3	3	3	3			3					2	3	2
CO3	Investigate physical, chemical & biological parameter of water	3	3	3	3			3					2	3	2
CO4	Design treatment units for water and waste water	3	3	3	3			3					2	3	2
CO5	Apply emerging technologies for treatment of waste water	3	3	3	3			3					2	3	2
	Target Outcome (Average) PO	3	3	3	3			3					2	3	2

	KCE064 : Foundation Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand various methods of Soil Exploration and its importance	3	3	3	3									3	2
CO2	Analyze bearing capacity and settlement of soil for shallow foundation	3	3	3	3									3	2
CO3	Design the various types of shallow foundation and understand the basics of deep foundation	3	3	3	3									3	2
CO4	Understand the characteristics of well foundations and retaining wall	3	3	3	3									3	2
CO5	Understand the concept of soil reinforcement	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KOE069 : Open Elective -1 (Understanding the Human Being Comprehensively – Human Aspirations and Its Fulfillment)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Have clarity about human aspirations, goal, activities and purpose of life						2	1	3				2	3	2
CO2	Understand the harmony in nature/existence and participation of human being in the nature/existence.						2	1	3				2	3	2
CO3	Understand the human tradition and its various components						2	1	3				2	3	2
CO4	Understand co-existence with other orders						2	1	3				2	3	2
CO5	Live with harmony from self to entire existence						2	1	3				2	3	2
	Target Outcome (Average) PO						2	1	3				2	3	2

	KCE651 : Transportation Engineering Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Determine properties of aggregates and assess its suitability in construction for transportation infrastructure	2	3	3	3										

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CO2	Determine properties of bitumen and check its suitability for pavement construction	2	3	3	3									3	2
CO3	Investigate traffic and speed study	2	3	3	3									3	2
CO4	Determine CBR Value of soil	2	3	3	3									3	2
	Target Outcome (Average) PO	2	3	3	3									3	2

	KCE652 : Environmental Engineering Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Measure and compare the physical, chemical and biological properties of water & wastewater	3	3	3	3			3		2			1	3	2
CO2	Measure the level of air pollution (Particulate Matter) and noise pollution	3	3	3	3			3		2			1	3	2
	Target Outcome (Average) PO	3	3	3	3			3		2			1	3	2

	KCE653 : Structural Detailing Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Study of standards for detailing of structural elements	2	3	3	3					2				3	2
CO2	Apply software tools for structural drafting and detailing of building components.	3	3	3	3					2				3	2
CO3	Create bar bending schedule for structural components of a building	2	3	3	3					2				3	2
CO4	Understand full set of structural drawing of a building	3	3	3	3					2				3	2
	Target Outcome (Average) PO	2.5	3	3	3					2				3	2

	KNC601 : Constitution of India, Law and Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify and explore the basic features and modalities about Indian constitution						2	1	2				2		
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level						2	1	2				2		
CO3	Differentiate different aspects of Indian Legal System and its related bodies						2	1	2				2		
CO4	Discover and apply different laws and regulations related to engineering practices						2	1	2				2		
CO5	Correlate role of engineers with different organizations and governance models						2	1	2				2		
	Target Outcome (Average) PO						2	1	2				2		

	KNC602 : Indian Traditions, Cultural and Society	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand, connect up and explain basics of Indian Traditional knowledge modern scientific perspective						3	1	2				2		
CO2	Have basic principles of thought process, reasoning and inference to identify the roots and details of contemporary issues faced by our nation and will try to locate possible solutions to these challenges						3	1	2				2		
CO3	Understand the importance of our surroundings and encouragement to contribute towards sustainable development						3	1	2				2		
CO4	Aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions						3	1	2				2		
CO5	Know Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system						3	1	2				2		
	Target Outcome (Average) PO						3	1	2				2		

	KHU701 : Rural Development: Administration and Planning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the definitions, concepts and components of Rural Development						2		1	1			1		
CO2	Know the importance, structure, significance, resources of Indian rural economy						2		1	1			1		
CO3	Have a clear idea about the area development programmes and its impact						2		1	1			1		
CO4	Acquire knowledge about rural entrepreneurship						2		1	1			1		
CO5	Understand about the using of different methods for human resource planning						2		1	1			1		
	Target Outcome (Average) PO						2		1	1			1		

	KHU702 : Project Management & Entrepreneurship	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Know the need and scope of entrepreneurship		3	3	3					2		3	1	3	2
CO2	Know the entrepreneurial idea and innovation		3	3	3					2		3	1	3	2
CO3	Know the insights of Project Management		3	3	3					2		3	1	3	2
CO4	Know the insights of Project Financing		3	3	3					2		3	1	3	2
CO5	Know the idea and insights of Social Entrepreneurship		3	3	3					2		3	1	3	2
	Target Outcome (Average) PO		3	3	3					2		3	1	3	2

	KCE070 : Railway, Waterway and Airway Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain the importance of railway infrastructure	3	3	3	3									3	2
CO2	Identify the factors governing design of railway infrastructures	3	3	3	3									3	2
CO3	Analysis and design the railway track system	3	3	3	3									3	2
CO4	Understand the concepts of airport engineering and design components of airport	3	3	3	3									3	2
CO5	Associate with the concepts of water transport system	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCE075 : Design of Steel Structures	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand properties of steel and types of loads acting on steel structures	3	3	3	3									3	2
CO2	Design welded and bolted type of connections for elementary steel structures.	2	3	3	3									3	2
CO3	Design tension members for elementary steel structures.	2	3	3	3									3	2
CO4	Design compression members such as simple columns, braced and latticed columns and column bases.	2	3	3	3									3	2
CO5	Design flexural members such as beams, purlins and girders	2	3	3	3									3	2

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	Target Outcome (Average) PO	2.2	3	3	3									3	2

	KOE074 : Open Elective-II (Renewable Energy Resources)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand various non-conventional energy resources						2	2						3	2
CO2	Understand solar thermal energy, its' storage for solar heating and cooling						2	2						3	2
CO3	Understand Geothermal Energy, its resources & use						2	2						3	2
CO4	Details of Thermo-electrical and thermionic Conversions, wind energy						2	2						3	2
CO5	Understand Bio-mass, its availability and conversion, ocean thermal energy conversion						2	2						3	2
	Target Outcome (Average) PO						2	2						3	2

	KCE751 : Concrete Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the standard codes for concrete constituents	2	3	3	3					2				3	2
CO2	Evaluate the properties of constituent material of concrete	2	3	3	3					2				3	2
CO3	Assess the quality parameters of fresh & hardened concrete	2	3	3	3					2				3	2
CO4	Design the concrete mix for desired strength	2	3	3	3					2				3	2
CO5	Evaluate strength of concrete using Non-Destructive methods	2	3	3	3					2				3	2
	Target Outcome (Average) PO	2	3	3	3					2				3	2

	KCE752 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand work related to preparation of bill of quantity & tender documents		3	3	3					2		3	1	3	2
CO2	Understand work related to design & drawing of flat slab using IS code method		3	3	3					2		3	1	3	2
CO3	Understand the work related to cost estimation of (including market survey of rates by students) building/earthwork for highway		3	3	3					2		3	1	3	2
CO4	Understand the work related to scheduling of activities of a project using software		3	3	3					2		3	1	3	2
CO5	Understand the work related to preparation of layout plan of a building and its marking on ground		3	3	3					2		3	1	3	2
	Target Outcome (Average) PO		3	3	3					2		3	1	3	2

	KCE753 : Project	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Work effectively as an individual and member of the team to solve complex civil engineering problems		3	3	3					2		3	1	3	2
CO2	Apply engineering knowledge to solve real life problems and involve in self-learning process		3	3	3					2		3	1	3	2
CO3	Apply modern tools for analysis and design of complex engineering problems		3	3	3					2		3	1	3	2
CO4	Develop ethical solutions of engineering problems taking into account its impact on society, environment and sustainability		3	3	3					2		3	1	3	2
CO5	Compose and present detailed project report of his/ her work and defend effectively		3	3	3					2		3	1	3	2
	Target Outcome (Average) PO		3	3	3					2		3	1	3	2

	KHU801 : Rural Development: Administration and Planning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the definitions, concepts and components of Rural Development						2	1		1		1	1	3	2
CO2	Know the importance, structure, significance, resources of Indian rural economy						2	1		1		1	1	3	2
CO3	Have a clear idea about the area development programmes and its impact						2	1		1		1	1	3	2
CO4	Acquire knowledge about rural entrepreneurship						2	1		1		1	1	3	2
CO5	Understand about the using of different methods for human resource planning						2	1		1		1	1	3	2
	Target Outcome (Average) PO						2	1		1		1	1	3	2

	KHU802 : Project Management & Entrepreneurship	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Know the need and scope of entrepreneurship		3	3	3					2		3	1	3	2
CO2	Know the entrepreneurial idea and innovation		3	3	3					2		3	1	3	2
CO3	Know the insights of Project Management		3	3	3					2		3	1	3	2
CO4	Know the insights of Project Financing		3	3	3					2		3	1	3	2
CO5	Know the idea and insights of Social Entrepreneurship		3	3	3					2		3	1	3	2
	Target Outcome (Average) PO		3	3	3					2		3	1	3	2

	KOE085 : Open Elective-III (Quality Management)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Know details of Quality Concept, Quality control evaluation	2	3	2	2								1	3	2
CO2	Know the insights of quality management	2	3	2	2								1	3	2
CO3	Know the details of Control Charts	2	3	2	2								1	3	2
CO4	Know the Defects Diagnosis and Prevention	2	3	2	2								1	3	2
CO5	Know the detailed standards to maintain quality	2	3	2	2								1	3	2
	Target Outcome (Average) PO	2	3	2	2								1	3	2

	KOE094 : Open Elective –IV (Digital & Social Media Marketing)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand shifting from traditional marketing practices to digital marketing practices										3	1	1		
CO2	Understand social media marketing and tools										3	1	1		
CO3	Understand the concept of online campaign management										3	1	1		
CO4	Understand digital leadership principles and reputation management										3	1	1		
CO5	Understand security and privatization issues with digital marketing										3	1			
	Target Outcome (Average) PO										3	1			

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	KCE851 : Project	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Work effectively as an individual and member of the team to solve complex civil engineering problems	1	3	3	3					2		3	1	3	2
CO2	Apply engineering knowledge to solve real life problems and involve in self-learning process	3	3	3	3					2		3	1	3	2
CO3	Apply modern tools for analysis and design of complex engineering problems	3	3	3	3	3				2		3	1	3	2
CO4	Develop ethical solutions of engineering problems taking into account its impact on society, environment and sustainability	1	3	3	3			2		2		3	1	3	2
CO5	Compose and present detailed project report of his/ her work and defend effectively	1	3	3	3					2		3	1	3	2
	Target Outcome (Average) PO	1.8	3	3	3	3		2		2		3	1	3	2

Overall Average PO	2.64	2.9	2.91	2.81	2.5	2.1	1.41	2	1.86	2.67	2.53	1.31	–	–
∑(PO)	344	563	565	547	125	105	68	100	134	48	112	147	–	–
Overall Average PSO	–	–	–	–	–	–	–	–	–	–	–	–	2.86	1.81
∑(PSO)	–	–	–	–	–	–	–	–	–	–	–	–	513	416

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