ESHAN COLLEGE OF ENGINEERING, MATHURA

Department of Computer Science & Engineering (CSE)

Programme: B.Tech. Computer Science & Engineering (CSE)

CO	Course Code/Course Name/ Course Outcome (CO)	Programme Outcome (PO)												Programme Specific Outcome (PSO)	
	KOE038 : 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	3	3	2	2									1	1
CO2	Study the application of conventional diode and semiconductor diode	3	3	2	2									1	1
CO3	Analyze the I-V characteristics of BJT and FET	2	2	3	3									1	1
CO4	Analyze the of Op-Amp, amplifiers, integrator, and differentiator	2	2	3	3									1	1
CO5	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope	3	3	3	3									1	1
	Target Outcome (Average) PO	2.6	2.6	2.6	2.6									1	1

	KAS302 : Maths-IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	The idea of partial differentiation and types of partial differential equations	3	1	2	2										
CO2	The idea of classification of second partial differential equations, wave, heat equation and transmission lines	3	1	2	2										
CO3	The basic ideas of statistics including measures of central tendency, correlation, regression and their properties	3	1	2	2										
CO4	The idea s of probability and random variables and various discrete and continuous probability distributions and their properties	3	1	2	1										
CO5	The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties	3	1	2	1										
	Target Outcome (Average) PO	3	1	2	1.6										

	KAS301 : Technical Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To understand the nature and objective of Technical Communication relevant for the work place as Engineers										2		1		1
CO2	To utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions										2		1		1
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience										3		1		1
CO4	Have a vast know-how of the application of the learning to promote their technical competence										2		1		1
CO5	To evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics										3		1		1
	Target Outcome (Average) PO										2.4		1		1

	KVE301 : Universal Human Values	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						
CO2	Understand the meaning of Harmony in the Self the Co-existence of Self and Body						2	1	3						
CO3	Understand the value of harmony in human-human relationships and explore their role in ensuring a harmonious society						2	1	3						
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature						2	1	3						
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment during work						2	1	3						
	Target Outcome (Average) PO						2	1	3						

	KCS301 : Data Structure	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

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CO1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications	3	3	3	3	3								3	2
CO2	Discuss the computational efficiency of the sorting and searching algorithms	3	3	3	3	3								3	2
CO3	Implementation of Trees and Graphs and perform various operations on these data structure	3	3	3	3	3								3	2
CO4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion	3	3	3	3	3								3	2
CO5	Identify the alternative implementations of data structures with respect to its performance to solve a real-world problem	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS302 : Computer Organization and Architecture	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Study of the basic structure and operation of a digital computer system	3	3	3	3	3								3	2
CO2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations.	3	3	3	3	3								3	2
CO3	Implementation of control unit techniques and the concept of Pipelining	3	3	3	3	3								3	2
CO4	Understanding the hierarchical memory system, cache memories and virtual memory	3	3	3	3	3								3	2
CO5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS303 : Discrete Structures and Theory of Logic	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Write an argument using logical notation and determine if the argument is or is not valid	3	3	3	3	3								3	2
CO2	Understand the basic principles of sets and operations in sets	3	3	3	3	3								3	2
CO3	Demonstrate an understanding of relations and functions and be able to determine their properties	3	3	3	3	3								3	2
CO4	Demonstrate different traversal methods for trees and graphs	3	3	3	3	3								3	2
CO5	Model problems in Computer Science using graphs and trees	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS351 : Data Structure using C lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate familiarity with major algorithms and data structures	1	3	3	3	3				2		2		3	2
CO2	Calculate and analyze performance of algorithms	1	3	3	3	3				2		2		3	2
CO3	Choose the appropriate data structure and algorithm design method for a specified application	1	3	3	3	3				2		2		3	2
CO4	Identify which algorithm or data structure to use in different scenarios	1	3	3	3	3				2		2		3	2
CO5	Familiar with writing recursive methods	1	3	3	3	3				2		2		3	2
	Target Outcome (Average) PO	1	3	3	3	3				2		2		3	2

	KCS352 : Computer Organization Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Illustrate HALF ADDER, FULL ADDER using basic logic gates and to learn various code conversions: Binary-to-Gray, Gray-to-Binary	1	3	3	3	3				2		2	2	3	2
CO2	Design 3-8-line DECODER and Implementing 4x1 and 8x1 MULTIPLEXERS	1	3	3	3	3				2		2	2	3	2
CO3	Demonstrate excitation tables of various FLIP-FLOPS and design of an 8-bit Input/ Output system with four 8-bit Internal Registers	1	3	3	3	3				2		2	2	3	2
CO4	Design of an 8-bit ARITHMETIC LOGIC UNIT	1	3	3	3	3				2		2	2	3	2
CO5	Designing of I/O using Registers, ALU and Control Unit and demonstrating the usage of Register Transfer Language (RTL)	1	3	3	3	3				2		2	2	3	2
	Target Outcome (Average) PO	1	3	3	3	3				2		2	2	3	2

	KCS353 : Discrete Structure & Logic Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Knowledge of logical notation to define and reason the fundamental mathematical concepts such as sets relations, functions, and integers	1	3	3	3	3				2			2	3	2
CO2	Discuss various structures and properties of modern algebra	1	3	3	3	3				2			2	3	2
CO3	Employ their logical ability such as reasoning able to setup mathematical model of real-life problem by applying advanced counting and computing techniques like generating function and recurrence relation	1	3	3	3	3				2			2	3	2
CO4	Demonstrate problems in different areas of computer science using trees and graphs	1	3	3	3	3				2			2	3	2

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CO5	Design solution with the help of induction hypotheses, simple induction proofs and recurrences	1	3	3	3	3				2			2	3	2
	Target Outcome (Average) PO	1	3	3	3	3				2			2	3	2

	KCS354 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Discover potential research areas in the field of IT	1	3	3	3	3				2		3	2		
CO2	Compare and contrast the several existing solutions for research challenge	1	3	3	3	3				2		3	2		
CO3	Demonstrate an ability to work in teams and manage the conduct of the research study	1	3	3	3	3				2		3	2		
CO4	Formulate and propose a plan for creating a solution for the research plan identified	1	3	3	3	3				2		3	2		
CO5	To report and present the findings of the study conducted in the preferred domain	1	3	3	3	3				2		3	2		
	Target Outcome (Average) PO	1	3	3	3	3				2		3	2		

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

	KNC302 : Python Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To read and write simple Python programs	1	3	3	3	3								3	2
CO2	To develop Python programs with conditionals and loops	1	3	3	3	3								3	2
CO3	To define Python functions and to use Python data structures – lists, tuples, dictionaries	1	3	3	3	3								3	2
CO4	To do input/output with files in Python	1	3	3	3	3								3	2
CO5	To do searching,sorting and merging in Python	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KOE034 : Sensor and Instrumentation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the use of sensors for measurement of displacement, force and pressure	3	3	3	3									3	2
CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level	3	3	3	3									3	2
CO3	Demonstrate the use of virtual instrumentation in automation industries	3	3	3	3									3	2
CO4	Identify and use data acquisition methods	3	3	3	3									3	2
CO5	Comprehend intelligent instrumentation in industrial automation	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KOE035 : Basics Data Structure and Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and analyze the time and space complexity of an algorithm	3	3	3	3	3								3	2
CO2	Understand and implement fundamental algorithms (including sorting algorithms, graph algorithms, and dynamic programming)	3	3	3	3	3								3	2
CO3	Discuss various algorithm design techniques for developing algorithms	3	3	3	3	3								3	2
CO4	Discuss various searching, sorting and graph traversal algorithms	3	3	3	3	3								3	2
CO5	Understand operation on Queue, Priority Queue, D-Queue	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KOE036 : Introduction to Soft Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory	3	3	3	3	3								3	2

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CO2	Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic	3	3	3	3	3								3	2
CO3	Describe with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations	3	3	3	3	3								3	2
CO4	Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications	3	3	3	3	3								3	2
CO5	Develop some familiarity with current research problems and research methods in Soft Computing Techniques	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KOE037 : Analog Electronics Circuits	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the characteristics of diodes and transistors	3	3	3	3									3	2
CO2	Design and analyze various rectifier and amplifier circuits	3	3	3	3									3	2
CO3	Design sinusoidal and non-sinusoidal oscillators	3	3	3	3									3	2
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits	3	3	3	3									3	2
CO5	Design LPF, HPF, BPF, BSF	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KAS402 : Maths IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	The idea of partial differentiation and types of partial differential equations	3	1	3	1										
CO2	The idea of classification of second partial differential equations, wave, heat equation and transmission lines	3	1	3	1										
CO3	The basic ideas of statistics including measures of central tendency, correlation, regression and their properties	3	1	3	1										
CO4	The idea s of probability and random variables and various discrete and continuous probability distributions and their properties	3	1	3	1										
CO5	The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties	3	1	3	1										
	Target Outcome (Average) PO	3	1	3	1										

	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 andskills, 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				1		
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				1		
CO3	Understand the value of harmonious relationship based on trust, respect and other naturallyacceptable feelings 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 wherever they work						2	1	3				1		
	Target Outcome (Average) PO						2	1	3				1		

	KAS301 : Technical Communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers										2		1		1
CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions										3				1
CO3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience										3		1		
CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence										2		1		
CO5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics										2		1		
	Target Outcome (Average) PO										2.4		1		1

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	KCS401 : Operating Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the structure and functions of OS	3	3	2	2	3								2	2
CO2	Learn about Processes, Threads and Scheduling algorithms	3	3	2	2	3								1	2
CO3	Understand the principles of concurrency and Deadlocks	3	3	2	2	3								1	2
CO4	Learn various memory management scheme	3	3	2	2	3								2	2
CO5	Study I/O management and File systems	3	3	2	2	3								2	2
	Target Outcome (Average) PO	3	3	2	2	3								1.6	2

	KCS402 : Theory of Automata and Formal Languages	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars	3	3	3	3	3								3	2
CO2	Analyse and design, Turing machines, formal languages, and grammars	3	3	3	3	3								3	2
CO3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving	3	3	3	3	3								3	2
CO4	Prove the basic results of the Theory of Computation	3	3	3	3	3								3	2
CO5	State and explain the relevance of the Church-Turing thesis	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS403 : Microprocessor	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system	3	3	3	3									3	2
CO2	Analyze a detailed s/w & h/w structure of the Microprocessor		3	3	3									3	2
CO3	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor		3	3	3									3	2
CO4	Analyze the properties of Microprocessors (8085/8086)		3	3	3									3	2
CO5	Evaluate the data transfer information through serial & parallel ports	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCS451 : Operating Systems Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and apply knowledge of basic UNIX/LINUX commands to solve various software problems and to automate real time applications	3	3		3					2			2	3	2
CO2	Understand and implement the concept of process synchronization tool like semaphore to solve mutual exclusion problem in order to coordinate concurrent process	3	3		3					2			2	3	2
CO3	Apply knowledge of process management techniques to design and solve various processsynchronization problems like Producer Consumer problem, Reader Writer problem and dining philosopher's problem	3	3	3	3					2			2	3	2
CO4	Compare and contrast among various CPU scheduling algorithms and apply knowledge to identify the best scheduling algorithm as per software requirement	3	3		3					2			2	3	2
CO5	Understand and apply the concepts of deadlock in operating systems to design and implement various deadlock avoidance algorithms like Banker's algorithm used in banking system	3	3	3	3					2			2	3	2
CO6	Understand and apply knowledge of basic UNIX/LINUX commands to solve various software problems and to automate real time applications	3	3	3	3					2			2	3	2
	Target Outcome (Average) PO	3	3	3	3					2			2	3	2

	KCS452 : Microprocessor Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Design and implement programs on 8085 microprocessor	2	3	3	3					2			2	3	2
CO2	Design and implement programs on 8086 microprocessor	2	3	3	3					2			2	3	2
CO3	Design interfacing circuits with 8085	2	3	3	3					2			2	3	2
CO4	Design interfacing circuits with 8086	2	3	3	3					2			2	3	2
CO5	Design and implement 8051 microcontroller based systems	2	3	3	3					2			2	3	2
	Target Outcome (Average) PO	2	3	3	3					2			2	3	2

	KCS453 : Python Language Programming Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate familiarity with major algorithms and data structures	2	3		3	3				2				3	2

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CO2	Calculate and analyze performance of algorithms	2	3	2	3	3				2			2	3	2
CO3	Choose the appropriate data structure and algorithm design method for a specified application	2	3	2	3	3				2			2	3	2
CO4	Identify which algorithm or data structure to use in different scenarios		3	2	3	3				2			2	3	2
CO5	Familiar with writing recursive methods		3		3	3				2			2	3	2
	Target Outcome (Average) PO	2	3	2	3	3				2			2	3	2

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

	KNC401 : Computer System Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	1	3	1	3	3								3	2
CO2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats	1	3	1	3	3								3	2
CO3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques	1	3	1	3	3								3	2
CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	1	3	1	3	3								3	2
CO5	To articulate the well knowncyber attack incidents, explain the attack scenarios, and explain mitigation techniques	1	3	1	3	3								3	2
	Target Outcome (Average) PO	1	3	1	3	3								3	2

	KOE044 : Sensor and Instrumentation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply the use of sensors for measurement of displacement, force and pressure	1	3	1	3									3	2
CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level	1	3	1	3									3	2
CO3	Demonstrate the use of virtual instrumentation in automation industries	1	3	3	3									3	2
CO4	Identify and use data acquisition methods	1	3	1	3									3	2
CO5	Comprehend intelligent instrumentation in industrial automation	1	3	3	3									3	2
	Target Outcome (Average) PO	1	3	1.8	3									3	2

	KOE045 : Basics Data Structure and Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and analyze the time and space complexity of an algorithm	3	3	3	3	3								3	2
CO2	Understand and implement fundamental algorithms (including sorting algorithms, graph algorithms, and dynamic programming)	3	3	3	3	3								3	2
CO3	Discuss various algorithm design techniques for developing algorithms	3	3	3	3	3								3	2
CO4	Discuss various searching, sorting and graph traversal algorithms	3	3	3	3	3								3	2
CO5	Understand operation on Queue, Priority Queue, D-Queue	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KOE046 : Introduction to Soft Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory	3	3	3	3	3								3	2
CO2	Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic	3	3	3	3	3								3	2
CO3	Describe with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations	3	3	3	3	3								3	2
CO4	Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications	3	3	3	3	3								3	2

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CO5	Develop some familiarity with current research problems and research methods in Soft Computing Techniques	1	3	3	3	3								3	2
	Target Outcome (Average) PO	2.6	3	3	3	3								3	2

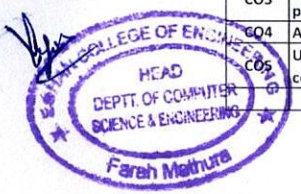
	KOE047 : Analog Electronics Circuits	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the characteristics of diodes and transistors	3	3	3	3									3	2
CO2	Design and analyze various rectifier and amplifier circuits	2	3	3	3									3	2
CO3	Design sinusoidal and non-sinusoidal oscillators	2	3	3	3									3	2
CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits	3	3	3	3									3	2
CO5	Design LPF, HPF, BPF, BSF	3	3	3	3									3	2
	Target Outcome (Average) PO	2.6	3	3	3									3	2

	KOE048 : 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	3	3	3	3									3	2
CO2	Study the application of conventional diode and semiconductor diode	3	3	3	3									3	2
CO3	Analyze the I-V characteristics of BJT and FET	3	3	3	3									3	2
CO4	Analyze the of Op-Amp, amplifiers, integrator, and differentiator	3	3	3	3									3	2
CO5	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCS501 : Database Management System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply knowledge of database for real life applications	3	3	3	3							2		3	2
CO2	Apply query processing techniques to automate the real time problems of databases	3	3	3	3							2		3	2
CO3	Identify and solve the redundancy problem in database tables using normalization	3	3	3	3							2		3	2
CO4	Understand the concepts of transactions, their processing so they will familiar with broad range of database management issues including data integrity, security and recovery	3	3	3	3							2		3	2
CO5	Design, develop and implement a small database project using database tools	3	3	3	3							2		3	2
	Target Outcome (Average) PO	3	3	3	3							2		3	2

	KCS502 : Compiler Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Acquire knowledge of different phases and passes of the compiler and also able to use the compiler tools like LEX, YACC, etc. Students will also be able to design different types of compiler tools to meet the requirements of the realistic constraints of compilers	3	3	3	3	3								3	2
CO2	Understand the parser and its types i.e Top-Down and Bottom-up parsers and construction of LL, SLR, CLR, and LALR parsing table	3	3	3	3	3								3	2
CO3	Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes	3	3	3	3	3								3	2
CO4	Acquire knowledge about run time data structure like symbol table organization and different techniques used in that	3	3	3	3	3								3	2
CO5	Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS503 : Design and Analysis of Algorithm	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Design new algorithms, prove them correct, and analyze their asymptotic and absolute runtime and memory demands	3	3	3	3	3								3	2
CO2	Find an algorithm to solve the problem (create) and prove that the algorithm solves the problem correctly (validate)	3	3	3	3	3								3	2
CO3	Understand the mathematical criterion for deciding whether an algorithm is efficient, and know many practically important problems that do not admit any efficient algorithms	3	3	3	3	3								3	2
CO4	Apply classical sorting, searching, optimization and graph algorithms	3	3	3	3	3								3	2
CO5	Understand basic techniques for designing algorithms, including the techniques of recursion, divide-and-conquer, and greedy	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2



	KCS051 : Data Analytics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the life cycle phases of Data Analytics through discovery, planning and building	3	3	3	3	3								3	2
CO2	Understand and apply Data Analysis Techniques	3	3	3	3	3								3	2
CO3	Implement various Data streams	3	3	3	3	3								3	2
CO4	Understand item sets, Clustering, frame works & Visualizations	3	3	3	3	3								3	2
CO5	Apply R tool for developing and evaluating real time applications	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS052 : Web Designing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand principle of Web page design and about types of websites	3	3	3	3	3								3	2
CO2	Visualize and recognize the basic concept of HTML and application in web designing	3	3	3	3	3								3	2
CO3	Recognize and apply the elements of Creating Style Sheet (CSS)	3	3	3	3	3								3	2
CO4	Understand the basic concept of Java Script and its application	3	3	3	3	3								3	2
CO5	Introduce basics concept of Web Hosting and apply the concept of SEO	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS053 : Computer Graphics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the graphics hardware used in field of computer graphics	3	3	3	3	3								3	2
CO2	Understand the concept of graphics primitives such as lines and circle based on different algorithms	3	3	3	3	3								3	2
CO3	Apply the 2D graphics transformations, composite transformation and Clipping concepts	3	3	3	3	3								3	2
CO4	Apply the concepts of and techniques used in 3D computer graphics, including viewing transformations	3	3	3	3	3								3	2
CO5	Perform the concept of projections, curve and hidden surfaces in real life	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS054 : Object Oriented System Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the application development and analyze the insights of object oriented programming to implement application	3	2	2	2	3								3	2
CO2	Understand, analyze and apply the role of overall modeling concepts (i.e. System, structural)	3	2	2	2	3								3	2
CO3	Understand, analyze and apply oops concepts (i.e abstraction, inheritance)	3	2	2	2	3								3	2
CO4	Understand the basic concepts of C++ to implement the object oriented concepts	3	2	2	2	3								3	2
CO5	To understand the objectoriented approach to implement real world problem	3	2	2	2	3								3	2
	Target Outcome (Average) PO	3	2	2	2	3								3	2

	KCS055 : Machine Learning Techniques	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To understand the need for machine learning for various problem solving	2	1	2	1	3								3	2
CO2	To understand a wide variety of learning algorithms and how to evaluate models generated from data	2	1	2	1	3								3	2
CO3	To understand the latest trends in machine learning	2	1	2	1	3								3	2
CO4	To design appropriate machine learning algorithms and apply the algorithms to a real-world problems	2	1	2	1	3								3	2
CO5	To optimize the models learned and report on the expected accuracy that can be achieved by applying the models	2	1	2	1	3								3	2
	Target Outcome (Average) PO	2	1	2	1	3								3	2

	KCS056 : Application of Soft Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Recognize the feasibility of applying a soft computing methodology for a particular problem	3	3	3	3	3								3	2
CO2	Understand the concepts and techniques of soft computing and foster their abilities in designing and implementing soft computing-based solutions for real-world and engineering problems	3	3	3	3	3								3	2
CO3	Apply neural networks to pattern classification and regression problems and compare solutions by various soft computing approaches for a given problem	3	3	3	3	3								3	2
CO4	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems	3	3	3	3	3								3	2
CO5	Apply genetic algorithms to combinatorial optimization problems	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

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	KCS057 : Augmented and Virtual Reality	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To make students know the basic concept and understand the framework of virtual reality	2	3	2	3	3								3	2
CO2	To understand principles and multidisciplinary features of virtual reality and apply it in developing applications	2	3	2	3	3								3	2
CO3	To know the technology for multimodal user interaction and perception VR, in particular the visual, audial and haptic interface and behavior	2	3	2	3	3								3	2
CO4	To understand and apply technology for managing large scale VR environment in real time	2	3	2	3	3								3	2
CO5	To understand an introduction to the AR system framework and apply AR tools in software development	2	3	2	3	3								3	2
	Target Outcome (Average) PO	2	3	2	3	3								3	2

	KCS058 : Human Computer Interface	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and analyze the common methods in the user-centered design process and the appropriateness of individual methods for a given problem.	3	3	3	3	3								3	2
CO2	Apply, adapt and extend classic design standards, guidelines, and patterns.	3	3	3	3	3								3	2
CO3	Employ selected design methods and evaluation methods at a basic level of competence.	3	3	3	3	3								3	2
CO4	Build prototypes at varying levels of fidelity, from paper prototypes to functional, interactive prototypes.	3	3	3	3	3								3	2
CO5	Demonstrate sufficient theory of human computer interaction, experimental methodology and inferential statistics to engage with the contemporary research literature in interface technology and design.	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS551 : Database Management Systems Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand and apply oracle 11 g products for creating tables, views, indexes, sequences and other database objects.	2	2	3	3					2		2	2	3	2
CO2	Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system	2	2	3	3					2		2	2	3	2
CO3	Write and execute simple and complex queries using DDL, DML, DCL and TCL	2	2	3	3					2		2	2	3	2
CO4	Write and execute PL/SQL blocks, procedure functions, packages and triggers, cursors.	2	2	3	3					2		2	2	3	2
CO5	Enforce entity integrity, referential integrity, key constraints, and domain constraints on database.	2	2	3	3					2		2	2	3	2
	Target Outcome (Average) PO	2	2	3	3					2		2	2	3	2

	KCS552 : Compiler Design Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify patterns, tokens & regular expressions for lexical analysis	3	3	3	3	3				2			2	3	2
CO2	Design Lexical analyser for given language using C and LEX /YACC tools	3	3	3	3	3				2			2	3	2
CO3	Design and analyze top down and bottom up parsers	3	3	3	3	3				2			2	3	2
CO4	Generate the intermediate code	3	3	3	3	3				2			2	3	2
CO5	Generate machine code from the intermediate code forms	3	3	3	3	3				2			2	3	2
	Target Outcome (Average) PO	3	3	3	3	3				2			2	3	2

	KCS553 : Design and Analysis of Algorithm Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Implement algorithm to solve problems by iterative approach	2	3	3	3	3				2			2	3	2
CO2	Implement algorithm to solve problems by divide and conquer approach	3	3	2	3	3				2			2	3	2
CO3	Implement algorithm to solve problems by Greedy algorithm approach	3	3	3	2	3				2			2	3	2
CO4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach	3	2	3	3	3				2			2	3	2
CO5	Implement algorithm to solve problems by branch and bound approach	3	3	3	2	3				2			2	3	2
	Target Outcome (Average) PO	2.8	2.8	2.8	2.6	3				2			2	3	2

	KCS554 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Developing a technical artifact requiring new technical skills and effectively utilizing a new software tool to complete a task		3	1	3	2				2		3		3	2

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CO2	Writing requirements documentation, selecting appropriate technologies, identifying and creating appropriate test cases for systems		3	1	3	2				2		3		3	2
CO3	Demonstrating understanding of professional customs & practices and working with professional standards		3	1	3	2				2		3		3	2
CO4	Improving problem-solving, critical thinking skills and report writing		3	1	3	2				2		3		3	2
CO5	Learning professional skills like exercising leadership, behaving professionally, behaving ethically, listening effectively, participating as a member of a team, developing appropriate workplace attitudes		3	1	3	2				3		3		3	2
	Target Outcome (Average) PO		3	1	3	2				2.2		3		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	1	1						1
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level						2	1	1						1
CO3	Differentiate different aspects of Indian Legal System and its related bodies						2	1	1						1
CO4	Discover and apply different laws and regulations related to engineering practices						2	1	1						1
CO5	Correlate role of engineers with different organizations and governance models						2	1	1						1
	Target Outcome (Average) PO						2	1	1						1

	KNC502 : Indian Tradition, Culture and Society	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To get basic principles of thought process, reasoning and inference to identify the roots and details of contemporary issues faced by our nation and try to locate possible solutions						3	1	1						1
CO2	To understand the importance of our surroundings and encourage the students to contribute towards sustainable development						3	1	1						1
CO3	To sensitize towards issues related to 'Indian' culture, tradition and its composite character						3	1	1						1
CO4	To 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	1						1
CO5	To acquaint with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system						3	1	1						1
	Target Outcome (Average) PO						3	1	1						1

	KCS601 : Software Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain various software characteristics and analyze different software Development Models	3	3	3	3	3								3	2
CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards	3	3	3	3	3								3	2
CO3	Compare and contrast various methods for software design	3	3	3	3	3								3	2
CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing	3	3	3	3	3								3	2
CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS602 : Web Technology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain web development Strategies and Protocols governing Web	3	3	3	3	3								3	2
CO2	Develop Java programs for window/web-based applications	3	3	3	3	3								3	2
CO3	Design web pages using HTML, XML, CSS and JavaScript	3	3	3	3	3								3	2
CO4	Creation of client-server environment using socket programming	3	3	3	3	3								3	2
CO5	Building enterprise level applications and manipulate web databases using JDBC	3	3	3	3	3								3	2
CO6	Design interactive web applications using Servlets and JSP	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS603 : Computer Networks	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission	3	3	3	3	2								2	2
CO2	Apply channel allocation, framing, error and flow control techniques	3	3	3	3	2								2	2
CO3	Describe the functions of Network Layer i.e Logical addressing, subnetting & Routing Mechanism	3	3	3	3	2								2	2

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CO4	Explain the different Transport Layer function i.e Port addressing, Connection Management, Error control and Flow control mechanism	3	3	3	3	2								2	2
CO5	Explain the functions offered by session and presentation layer and their Implementation	3	3	3	3	2								2	2
CO6	Explain the different protocols used at application layer i.e HTTP, SNMP, SMTP, FTP, TELNET and VPN	3	3	3	3	2								2	2
	Target Outcome (Average) PO	3	3	3	3	2								2	2

	KCS061 : Big Data	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate knowledge of Big Data Analytics concepts and its applications in business	3	3	3	3	2								2	2
CO2	Demonstrate functions and components of Map Reduce Framework and HDFS	3	3	3	3	2								2	2
CO3	Discuss Data Management concepts in NoSQL environment	3	3	3	3	2								2	2
CO4	Explain process of developing Map Reduce based distributed processing applications	3	3	3	3	2								2	2
CO5	Explain process of developing applications using HBASE, Hive, Pig etc	3	3	3	3	2								2	2
	Target Outcome (Average) PO	3	3	3	3	2								2	2

	KCS062 : Image Processing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain the basic concepts of two-dimensional signal acquisition, sampling, quantization and color model	1	3	3	3	2								2	2
CO2	Apply image processing techniques for image enhancement in both the spatial and frequency domains	3	3	3	3	2								2	2
CO3	Apply and compare image restoration techniques in both spatial and frequency domain	3	3	3	3	2								2	2
CO4	Compare edge based and region-based segmentation algorithms for ROI extraction	1	3	3	3	2								2	2
CO5	Explain compression techniques and descriptors for image processing	3	3	3	3	2								2	2
	Target Outcome (Average) PO	2.2	3	3	3	2								2	2

	KCS063 : Real Time System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Illustrate the need and the challenges in the design of hard and soft real time systems	1	3	3	3	3								2	2
CO2	Compare different scheduling algorithms and the schedulable criteria	3	3	3	3	3								2	2
CO3	Discuss resource sharing methods in real time environment	1	3	3	3	3								2	2
CO4	Compare and contrast different real time communication and medium access control techniques	3	3	3	3	3								2	2
CO5	Analyze real time Operating system and Commercial databases	3	3	3	3	3								2	2
	Target Outcome (Average) PO	2.2	3	3	3	3								2	2

	KCS064 : Data Compression	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the evolution and fundamental concepts of Data Compression and Coding Techniques	3	3	3	3										2
CO2	Apply and compare different static coding techniques (Huffman & Arithmetic coding) for text compression	3	3	3	3	3								2	2
CO3	Apply and compare different dynamic coding techniques (Dictionary Technique) for text compression	3	3	3	3	3								2	2
CO4	Evaluate the performance of predictive coding technique for Image Compression	3	3	3	3									2	2
CO5	Apply and compare different Quantization Techniques for Image Compression	3	3	3	3	3								2	2
	Target Outcome (Average) PO	3	3	3	3	3								2	2

	KCS651 : Software Engineering Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement	3	3	3	3	3				2			2	3	2
CO2	Identify different actors and use cases from a given problem statement and draw use case diagram to associate use cases with different types of relationship	3	3	3	3	3				2			2	3	2
CO3	Draw a class diagram after identifying classes and association among them	3	3	3	3	3				2			2	3	2
CO4	Graphically represent various UML diagrams, and associations among them and identify the logical sequence of activities undergoing in a system, and represent them pictorially	3	3	3	3	3				2			2	3	2
CO5	Able to use modern engineering tools for specification, design, implementation and testing	3	3	3	3	3				2			2	3	2
	Target Outcome (Average) PO	3	3	3	3	3				2			2	3	2

	KCS652 : Web Technology Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Develop static web pages using HTML	3	3	3	3	3				2			2	3	2

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CO2	Develop Java programs for window/web-based applications	3	3	3	3	3				2			2	3	2
CO3	Design dynamic web pages using Javascript and XML	3	3	3	3	3				2			2	3	2
CO4	Design dynamic web page using server site programming Ex. ASP/JSP/PHP	3	3	3	3	3				2			2	3	2
CO5	Design server site applications using JDDC,ODBC and section tracking API	3	3	3	3	3				2			2	3	2
	Target Outcome (Average) PO	3	3	3	3	3				2			2	3	2

	KCS653 : Computer Networks Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Simulate different network topologies	3	3	3	3	3				2			2	3	2
CO2	Implement various framing methods of Data Link Layer	3	3	3	3	3				2			2	3	2
CO3	Implement various Error and flow control techniques	3	3	3	3	3				2			2	3	2
CO4	Implement network routing and addressing techniques	3	3	3	3	3				2			2	3	2
CO5	Implement transport and security mechanisms	3	3	3	3	3				2			2	3	2
	Target Outcome (Average) PO	3	3	3	3	3				2			2	3	2

	KOE060 : Idea to Business Model	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Enhance creative knowledge of students regarding selection of a business idea and it's implementation process	3	3	3	3							1	1		
CO2	Acquire knowledge on entrepreneurship development, its Pro's and con's	3	3	3	3							1	1		
CO3	Acquire basic knowledge on how to become an entrepreneur	3	3	3	3							1	1		
CO4	Develop knowledge on Production systems and it's sustainability through production, planning and control (PPC)	3	3	3	3							1	1		
CO5	Develop appropriate business model and apply in a better way	3	3	3	3							1	1		
	Target Outcome (Average) PO	3	3	3	3							1	1		

	KOE061 : Real Time Systems	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe concepts of Real-Time systems and modeling	3	3	3	3	3								3	2
CO2	Recognize the characteristics of a real-time system in context with real time scheduling	3	3	3	3	3								3	2
CO3	Classify various resource sharing mechanisms and their related protocols	3	3	3	3	3								3	2
CO4	Interpret the basics of real time communication by the knowledge of real time models and protocols	3	3	3	3	3								3	2
CO5	Apply the basics of RTOS in interpretation of real time systems	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KOE062 : Embedded System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the basics of embedded system and its structural units	3	3	3	3									3	2
CO2	Analyze the embedded system specification and develop software programs	3	3	3	3									3	2
CO3	Evaluate the requirements of the programming embedded systems, related software architecture	3	3	3	3									3	2
CO4	Understand the RTOS based embedded system design	3	3	3	3									3	2
CO5	Understand all the applications of the embedded system and designing issues	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KOE063 : Introduction to MEMS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the Basic concept of MEMS Fabrication Technologies, Piezoresistance Effect, Piezoelectricity, Piezoresistive Sensor	1	3	3	3									3	2
CO2	Explain Mechanics of Beam and Diaphragm Structures.	1	3	3	3									3	2
CO3	Understand the Basic concept of Air Damping and Basic Equations for Slide-film Air Damping, Couette-flow Model, Stokes-flow Model	1	3	3	3									3	2
CO4	Know the concept of Electrostatic Actuation	1	3	3	3									3	2
CO5	Understand the applications of MEMS in RF	1	3	3	3									3	2
	Target Outcome (Average) PO	1	3	3	3									3	2

	KOE064 : Object Oriented Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the Basic concept of Object Orientation, object identity and Encapsulation	1	3	3	3	3								3	2
CO2	Understand the Basic concept of Basic Structural Modeling	1	3	3	3	3								3	2

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CO3	Know the knowledge of Object oriented design, Object design	1	3	3	3	3								3	2
CO4	Know the knowledge of C++ Basics	1	3	3	3	3								3	2
CO5	Understand the Basics of object and class in C++	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1	3	3	3	3								3	2

	KOE065 : Computer based Numerical Techniques	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the concept of errors to evaluate approximate roots of several types of equations	3	3	3	3	3								3	2
CO2	Analyze the problem and evaluate data by different interpolation methods and creating interpolating graphs	3	3	3	3	3								3	2
CO3	Understand the concept of interpolation to analyze and evaluate the numerical differentiation and integration	3	3	3	3	3								3	2
CO4	Remember the concept of formula based the solution of ordinary differential equations to evaluate differential equations withy initial conditions	3	3	3	3	3								3	2
CO5	Apply the concept of partial differential equation to evaluate the partial differential equations	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KOE066 : GIS & Remote Sensing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand about the principles of Remote Sensing and its advantages and limitations	1	3	3	3									3	2
CO2	Retrieve the information content of remotely sensed data	1	3	3	3									3	2
CO3	Apply problem specific remote sensing data for engineering applications	1	3	3	3									3	2
CO4	Analyze spatial and attribute data for solving spatial problems	1	3	3	3									3	2
CO5	Create GIS and cartographic outputs for presentation	1	3	3	3									3	2
	Target Outcome (Average) PO	1	3	3	3									3	2

	KOE067 : Basics of Data Base Management System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the features of a database system and its application and compare various types of data models	2	3	3	3							2		3	2
CO2	Construct an ER Model for a given problem and transform it into a relation database schema	2	3	3	3							2		3	2
CO3	Formulate solution to a query problem using SQL Commands, relational algebra, tuple calculus and domain calculus	2	3	3	3							2		3	2
CO4	Explain the need of normalization and normalize a given relation to the desired normal form	2	3	3	3							2		3	2
CO5	Explain different approaches of transaction processing and concurrency control	2	3	3	3							2		3	2
	Target Outcome (Average) PO	2	3	3	3							2		3	2

	KOE068 : Software Project Management	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Identify project planning objectives, along with various cost/effort estimation models	1	2	3	3							3	1	3	2
CO2	Organize & schedule project activities to compute critical path for risk analysis	1	2	3	3	1						3	1	3	2
CO3	Monitor and control project activities	1	2	3	3	1						3	1	3	2
CO4	Formulate testing objectives and test plan to ensure good software quality under SEI-CMM	1	2	3	3	1						3	1	3	2
CO5	Configure changes and manage risks using project management tools	1	2	3	3	1						3	1	3	2
	Target Outcome (Average) PO	1	2	3	3	1						3	1	3	2

	KOE069 : 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	To have clarity about human aspirations, goal, activities and purpose of life						2	1	3				2		
CO2	To understand the harmony in nature/existence and participation of human being in the nature/existence.						2	1	3				2		
CO3	To understand the human tradition and its various components						2	1	3				2		
CO4	To understand co-existence with other orders						2	1	3				2		
CO5	To live with harmony from self to entire existence						2	1	3				2		
	Target Outcome (Average) PO						2	1	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	1						

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CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level						2	1	1				2		
CO3	Differentiate different aspects of Indian Legal System and its related bodies						2	1	1				2		
CO4	Discover and apply different laws and regulations related to engineering practices						2	1	1				2		
CO5	Correlate role of engineers with different organizations and governance models						2	1	1				2		
	Target Outcome (Average) PO						2	1	1				2		

	KNC602 : Indian Tradition, Cultural and Society	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To get basic principles of thought process, reasoning and inference to identify the roots and details of contemporary issues faced by our nation and try to locate possible solutions						3	1	1				2		
CO2	To understand the importance of our surroundings and encourage the students to contribute towards sustainable development						3	1	1				2		
CO3	To sensitize towards issues related to 'Indian' culture, tradition and its composite character						3	1	1				2		
CO4	To 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	1				2		
CO5	To acquaint with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system						3	1	1				2		
	Target Outcome (Average) PO						3	1	1				2		

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

	KHU702 : Project Management & Entrepreneurship	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand need, scope, entrepreneurial competencies & traits	1	3	3	3					2		3	2		
CO2	Entrepreneurial idea and innovation	1	3	3	3					2		3	2		
CO3	Understand project appraisal: Preparation of a real time project feasibility report containing technical appraisal	1	3	3	3					2		3	2		
CO4	Understand project financing	1	3	3	3					2		3	2		
CO5	Understand social entrepreneurship	1	3	3	3					2		3	2		
	Target Outcome (Average) PO	1	3	3	3					2		3	2		

	KCS071 : Artificial Intelligence	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the basics of the theory and practice of Artificial Intelligence as a discipline and about intelligent agents	3	3	3	3	3								3	2
CO2	Understand search techniques and gaming theory	3	3	3	3	3								3	2
CO3	The student will learn to apply knowledge representation techniques and problem-solving strategies to common AI applications	3	3	3	3	3								3	2
CO4	Student should be aware of techniques used for classification and clustering	3	3	3	3	3								3	2
CO5	Student should aware of basics of pattern recognition and steps required for it	3	3	3	3	3								3	2
	Target Outcome (Average) PO	3	3	3	3	3								3	2

	KCS072 : Natural Language Processing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To learn the fundamentals of natural language processing	2	3	2	2	3								3	2
CO2	To understand the use of CFG and PCFG in NLP	2	3	2	2	3								3	2
CO3	To understand the role of semantics of sentences and pragmatic	2	3	2	2	3								3	2
CO4	To introduce speech production and related parameters of speech	2	3	2	2	3								3	2
CO5	To show the computation and use of techniques such as short time fourier transform, linear predictive coefficients and other coefficients in the analysis of speech	2	3	2	2	3								3	2
	Target Outcome (Average) PO	2	3	2	2	3								3	2

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	KCS073 : High Performance Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Able to understand the basic concept of Computer architecture and Modern Processor	2	3	3	2	3								3	2
CO2	Able to understand the basic concepts of access optimization and parallel computers	2	3	3	2	3								3	2
CO3	Able to describe different parallel processing platforms involved in achieving high performance computing	2	3	3	3	3								3	2
CO4	Develop efficient and high performance parallel programming	2	3	3	3	3								3	2
CO5	Able to learn parallel programming using message passing paradigm	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	2.6	3								3	2

	KCS074 : Cryptography & Network Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Classify the symmetric encryption techniques and Illustrate various Public key cryptographic techniques	2	3	3	3	3								1	2
CO2	Understand security protocols for protecting data on networks and be able to digitally sign emails and files	3	3	3	2	2								1	2
CO3	Understand vulnerability assessments and the weakness of using passwords for authentication	3	3	3	3	3								1	2
CO4	Be able to perform simple vulnerability assessments and password audits	2	3	3	2	2								1	2
CO5	Summarize the intrusion detection and its solutions to overcome the attacks	2	3	3	3	3								1	2
	Target Outcome (Average) PO	2.4	3	3	2.6	2.6								1	2

	KCS075 : Design & Development of Applications	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Be exposed to technology and business trends impacting mobile applications	2	3	3	3	3								3	2
CO2	Be competent with the characterization and architecture of mobile applications	2	3	3	3	3								3	2
CO3	Be competent with understanding enterprise scale requirements of mobile applications	2	3	3	3	3								3	2
CO4	Be competent with designing and developing mobile applications using one application development framework	2	3	3	3	3								3	2
CO5	Be exposed to Android and iOS platforms to develop the mobile applications	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS076 : Software Testing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Have an ability to apply software testing knowledge and engineering methods	2	3	3	3	3								3	2
CO2	Have an ability to design and conduct a software test process for a software testing project	2	3	3	3	3								3	2
CO3	Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation	2	3	3	3	3								3	2
CO4	Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods	2	3	3	3	3								3	2
CO5	Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS077 : Distributed System	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To provide hardware and software issues in modern distributed systems	2	3	3	3	3								3	2
CO2	To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems	2	3	3	3	3								3	2
CO3	To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed	2	3	3	3	3								3	2
CO4	To know about Shared Memory Techniques and have Sufficient knowledge about file access	2	3	3	3	3								3	2
CO5	Have knowledge of Synchronization and Deadlock	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS078 : Deep Learning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To present the mathematical, statistical and computational challenges of building neural networks	2	3	3	3	3								3	2
CO2	To study the concepts of deep learning	2	3	3	3	3								3	2
CO3	To introduce dimensionality reduction techniques	2	3	3	3	3								3	2
CO4	To enable the students to know deep learning techniques to support real-time applications	2	3	3	3	3								3	2

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CO5	To examine the case studies of deep learning techniques	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

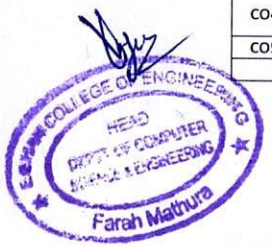
	KCS079 : Service Oriented Architecture	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Comprehend the need for SOA and its systematic evolution	2	3	3	3	3								3	2
CO2	Apply SOA technologies to enterprise domain	2	3	3	3	3								3	2
CO3	Design and analyze various SOA patterns and techniques	2	3	3	3	3								3	2
CO4	Compare and evaluate best strategies and practices of SOA	2	3	3	3	3								3	2
CO5	Understand the business case for SOA	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS710 : Quantum Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Distinguish problems of different computational complexity and explain why certain problems are rendered tractable by quantum computation with reference to the relevant concepts in quantum theory	2	3	3	3	3								3	2
CO2	Demonstrate an understanding of a quantum computing algorithm by simulating it on a classical computer, and state some of the practical challenges in building a quantum computer	2	3	3	3	3								3	2
CO3	Contribute to a medium-scale application program as part of a co-operative team, making use of appropriate collaborative development tools (such as version control systems)	2	3	3	3	3								3	2
CO4	Produce code and documentation that is comprehensible to a group of different programmers and present the theoretical background and results of a project in written and verbal form	2	3	3	3	3								3	2
CO5	Apply knowledge, skills, and understanding in executing a defined project of research, development, or investigation and in identifying and implementing relevant outcomes	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS711 : Mobile Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain and discuss issues in mobile computing and illustrate overview of wireless telephony and channel allocation in cellular systems	2	3	3	3	3								3	2
CO2	Explore the concept of Wireless Networking and Wireless LAN	2	3	3	3	3								3	2
CO3	Analyse and comprehend Data management issues like data replication for mobile computers, adaptive clustering for mobile wireless networks and Disconnected operations	2	3	3	3	3								3	2
CO4	Identify Mobile computing Agents and state the issues pertaining to security and fault tolerance in mobile computing environment	2	3	3	3	3								3	2
CO5	Compare and contrast various routing protocols and will identify and interpret the performance of network systems using Adhoc networks	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS712 : Internet of Things	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate basic concepts, principles and challenges in IoT	2	3	3	3	3								3	2
CO2	Illustrate functioning of hardware devices and sensors used for IoT		3	3	3	3								3	2
CO3	Analyze network communication aspects and protocols used in IoT	2	3	3	3	3								3	2
CO4	Apply IoT for developing real life applications using Ardunio programming		3	3	3	3								3	2
CO5	To develop IoT infrastructure for popular applications	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KCS713 : Cloud Computing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe architecture and underlying principles of cloud computing	2	3	3	3	3								3	2
CO2	Explain need, types and tools of Virtualization for cloud	2	3	3	3	3								3	2
CO3	Describe Services Oriented Architecture and various types of cloud services	2	3	3	3	3								3	2
CO4	Explain Inter cloud resources management cloud storage services and their providers Assess security services and standards for cloud computing	1	3	3	3	3								3	2
CO5	Analyze advanced cloud technologies	1	3	3	3	3								3	2
	Target Outcome (Average) PO	1.6	3	3	3	3								3	2



	KCS714 : Block Chain Architecture Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the basic understanding of Blockchain architecture along with its primitive	2	3	3	3	3								3	2
CO2	Explain the requirements for basic protocol along with scalability aspects	1	3	3	3	3								3	2
CO3	Design and deploy the consensus process using frontend and backend	1	3	3	3	3								3	2
CO4	Apply Blockchain techniques for different use cases like Finance, Trade/Supply and Government activities	3	3	3	3	3								3	2
	Target Outcome (Average) PO	1.75	3	3	3	3								3	2

	KCS752 : Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Developing a technical artifact requiring new technical skills and effectively utilizing a new software tool to complete a task	2	3	3	3					2		3		3	2
CO2	Writing requirements documentation, selecting appropriate technologies, identifying and creating appropriate test cases for systems	1	3	3	3					2		3		3	2
CO3	Demonstrating understanding of professional customs & practices and working with professional standards	2	3	3	3					2		3		3	2
CO4	Improving problem-solving, critical thinking skills and report writing	1	3	3	3					2		3		3	2
CO5	Learning professional skills like exercising leadership, behaving professionally, behaving ethically, listening effectively, participating as a member of a team, developing appropriate workplace attitudes	2	3	3	3					2		3		3	2
	Target Outcome (Average) PO	1.6	3	3	3					2		3		3	2

	KCS753 : Project	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze and understand the real-life problem and apply their knowledge to get programming solution		3	3	3					2		3	2	3	2
CO2	Engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues		3	3	3					2		3	2	3	2
CO3	Use the various tools and techniques, coding practices for developing real life solution to the problem		3	3	3					2		3	2	3	2
CO4	Find out the errors in software solutions and establishing the process to design maintainable software applications		3	3	3					2		3	2	3	2
CO5	Write the report about what they are doing in project and learning the team working skills		3	3	3					2		3	2	3	2
	Target Outcome (Average) PO		3	3	3					2		3	2	3	2

	KOE071 : Filter Design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Choose an appropriate transform for the given signal.	2	3	3	3									3	2
CO2	Choose appropriate decimation and interpolation factors for high performance filters.	2	3	3	3									3	2
CO3	Model and design an AR system	2	3	3	3									3	2
CO4	Implement filter algorithms on a given DSP processor platform.	2	3	3	3									3	2
CO5	Understand the concept of Approximation Theory.	2	3	3	3									3	2
	Target Outcome (Average) PO	2	3	3	3									3	2

	KOE072 : Bioeconomics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Students will be able to understand basic concept of Bioeconomics, challenges, opportunities & regulations	1	3	3	3									3	2
CO2	Students will be able to understand development and innovation in terms of bioeconomy towards sustainable development	1	3	3	3									3	2
CO3	Students will be able to understand Inter- and transdisciplinarity in bioeconomy & research approaches	1	3	3	3									3	2
CO4	Students will be able to explain biobased resources, value chain, innovative use of biomass and biological knowledge to provide food, feed, industrial products	1	3	3	3									3	2
CO5	Know importance of bioeconomy related concepts in public, scientific, and political discourse	1	3	3	3									3	2
	Target Outcome (Average) PO	1	3	3	3									3	2

	KOE073 : Machine Learning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand the need for machine learning for various problem solving	2	3	3	3	3								3	2
CO2	Understand a wide variety of learning algorithms and how to evaluate models generated from data	2	3	3	3	3								3	2
CO3	Understand the latest trends in machine learning	2	3	3	3	3								3	2
CO4	Design appropriate machine learning algorithms and apply the algorithms to a real-world problems	2	3	3	3	3								3	2

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DIRECTOR
MATHURA

CO5	Optimize the models learned and report on the expected accuracy that can be achieved by applying the models	2	3	3	3	3								3	2
	Target Outcome (Average) PO	2	3	3	3	3								3	2

	KOE077 : Design Thinking	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Develop a strong understanding of the design process and apply it in a variety of business settings	3	3	3	3									3	2
CO2	Analyze self, culture, teamwork to work in a multidisciplinary environment and exhibit empathetic behavior	3	3	3	3									3	2
CO3	Formulate specific problem statements of real time issues and generate innovative ideas using design tools	3	3	3	3									3	2
CO4	Apply critical thinking skills in order to arrive at the root cause from a set of likely causes	3	3	3	3									3	2
CO5	Demonstrate an enhanced ability to apply design thinking skills for evaluation of claims and arguments	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									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						1	1		1		1	1		
CO2	Will know the importance, structure, significance, resources of Indian rural economy						1	1		1		1	1		
CO3	Will have a clear idea about the area development programmes and its impact						1	1		1		1	1		
CO4	Will be able to acquire knowledge about rural entrepreneurship						1	1		1		1	1		
CO5	Will be able to understand about the using of different methods for human resource planning						1	1		1		1	1		
	Target Outcome (Average) PO						1	1		1		1	1		

	KHU802 : Project Management & Entrepreneurship	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Understand need, scope, entrepreneurial competencies & traits		3	3	3		1	1		2		3	2	3	2
CO2	Entrepreneurial idea and innovation		3	3	3		1	1		2		3	2	3	2
CO3	Understand project appraisal: Preparation of a real time project feasibility report containing technical appraisal		3	3	3		1	1		2		3	2	3	2
CO4	Understand project financing		3	3	3		1	1		2		3	2	3	2
CO5	Understand social entrepreneurship		3	3	3		1	1		2		3	2	3	2
	Target Outcome (Average) PO		3	3	3		1	1		2		3	2	3	2

	KOE080 : Fundamentals of Drone Technology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To design UAV drone system	3	3	3	3									3	2
CO2	To understand working of different types of engines and its area of applications	3	3	3	3									3	2
CO3	To understand static and dynamic stability dynamic instability and control concepts	3	3	3	3									3	2
CO4	To know the loads taken by aircraft and type of construction and also construction materials in them	3	3	3	3									3	2
	Target Outcome (Average) PO	3	3	3	3									3	2

	KCS851 : Project I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze and understand the reallife problem and apply their knowledge to get programming solution		3	3	3		1	1		2		3	2	3	2
CO2	Engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues		3	3	3		1	1		2		3	2	3	2
CO3	Use the various tools and techniques, coding practices for developing real life solution to the problem		3	3	3		1	1		2		3	2	3	2
CO4	Find out the errors in software solutions and establishing the process to design maintainable software applications		3	3	3		1	1		2		3	2	3	2
CO5	Write the report about what they are doing in project and learning the team working skills		3	3	3		1	1		2		3	2	3	2
	Target Outcome (Average) PO		3	3	3		1	1		2		3	2	3	2

	Overall Average PO	**2.38**	**2.88**	**2.85**	**2.88**	**2.89**	**1.81**	**1**	**1.75**	**1.96**	**2.4**	**2.4**	**1.8**	–	–
	∑(PO)	**974**	**1260**	**1231**	**1258**	**863**	**100**	**55**	**70**	**198**	**24**	**180**	**232**		

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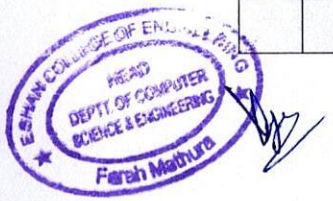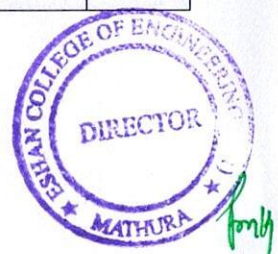
	Overall Average PSO	–	–	–	–	–	–	–	–	–	–	–	–	2.87	1.94
	∑(PSO)	–	–	–	–	–	–	–	–	–	–	–	–	1178	837