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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA101			
Subject Name: Fundamental of Computers & Emerging Technologies			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Develop the basic knowledge of computer components and algorithms to solve problems using programming concepts.	3	P
CO2	Demonstrate the features and types of operating system and computer networks.	2	C
CO3	Illustrate the basic services of Internet and applications of Internet of Things.	2	C
CO4	Examine the features of Blockchain, Cryptocurrency and benefits of cloud computing.	2	C
CO5	Discuss the emerging trends and technologies in the field of Information Technology.	2	C

Subject Code: KCA 101														
Subject Name: Fundamental of Computers & Emerging Technologies														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	2	-	-	2	-	-	-	-	-	-	-	2	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	1	2	2	-	1	-	-	1	1	-	-	-
CO4	3	-	-	2	2	-	1	-	-	-	-	-	-	1
CO5	3	-	1	3	3	-	2	-	-	1	-	-	-	-
PO Target	3	2	1	2.33	2.25	-	1.33	-	-	1	1	-	2	1

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA102			
Subject Name: Problem Solving using C			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Demonstrate the solution of basic problems with the help of flowcharts and algorithms.	3	P
CO2	Construct 'C' programs that incorporate use of variables, operators, and expressions along with data types.	3	P
CO3	Illustrate the programs using control statements, functions, arrays, and strings.	3	P
CO4	Construct programs using the advanced concepts like pointers, structures, union, and enumerated data types.	3	P
CO5	Apply file I/ O operations on binary and text files.	3	P

Subject Code: KCA102													
Subject Name: Problem Solving using C													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	1	2	-	-	-	-	1	-	1	-	1	1	-	-
CO2	1	1	-	-	-	-	1	-	-	-	1	-	1	-
CO3	2	2	-	-	-	-	2	-	-	-	1	-	3	-
CO4	2	2	-	-	-	-	2	-	1	-	1	-	3	-
CO5	1	2	-	-	-	-	1	-	-	-		-	1	-
PO Target	1.4	1.8	-	-	-	-	1.4	-	1	-	1	1	2	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA 103			
Subject Name: Principles of Management & Communication			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Describe primary features, processes and principles of management.	3	C
CO2	Explain the functions of management in terms of planning, organizing and decision making.	3	C
CO3	Illustrate key factors of leadership skill in directing and controlling business resources and processes.	3	C
CO4	Exhibit adequate verbal and non-verbal communication skills at workplace.	3	C
CO5	Demonstrate effective discussion, presentation and writing skills for various tasks and events like meeting, drafting of letter, proposal and report and their presentation etc.	3	P

Subject Code: KCA 103													
Subject Name: Principles of Management & Communication													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	-	-	-	-	-	-	1	-	-	-	2	-	-	-
CO2	-	-	-	-	-	-	1	-	-	-	2	-	-	-
CO3	-	-	-	-	-	-	2	-	-	-	2	-	-	-
CO4	-	-	-	-	-	-	2	-	3	-	2	-	-	-
CO5	-	-	-	-	-	-	2	-	3	-	2	-	-	-
PO Target	-	-	-	-	-	-	1.6	-	3	-	2	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA-104			
Subject Name: Discrete Mathematics			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Examine the mathematical and logical notation for basic discrete structures such as Sets, Relations and Functions	3	P
CO2	Apply mathematical arguments using logical connectives and quantifiers to check the validity of an argument.	3	P
CO3	Prove properties of Algebraic Structures like Groups, Rings and Fields	3	P
CO4	Solve recurrences relations and generating functions using mathematical logics.	3	P
CO5	Illustrate the concept of combinatorics to solve basic problems in discrete mathematics	4	P

Subject Code: KCA-104													
Subject Name: Discrete Mathematics													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	2	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	1	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	2	-	-	-	-	-	-	-
PO Target	3	2	-	-	-	-	1.6	-	-	-	-	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA-105			
Subject Name: Computer Organization and Architecture			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Determine the functional units of digital system and operations performed by arithmetic and logical unit.	3	P
CO2	Demonstrate the various processor organisations with different addressing modes.	3	P
CO3	Examine the organizations of control unit along with Instruction execution stages and pipeline concept.	3	P
CO4	Analyse the different types of memories and its organization.	4	P
CO5	Illustrate the modes of communication between IO devices and CPU.	3	P

Subject Code: KCA-105													
Subject Name: Computer Organization and Architecture													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	1	-	-	-	-	1	-	-	-	-	-	-	-
CO2	3	1	-	-	-	-	1	-	-	-	-	-	-	-
CO3	3	1	-	-	-	-	1	-	-	-	-	-	-	-
CO4	3	1	-	-	-	-	1	-	-	-	-	-	-	-
CO5	3	1	-	-	-	-	1	-	-	-	-	-	-	-
PO Target	3	1	-	-	-	-	1	-	-	-	-	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA151			
Subject Name: Problem Solving Using C			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Demonstrate Integrated Development Environment (IDE) for compilation, debugging and execution of C program.	3	P
CO2	Write programs using variables, operators, and expressions along with data types.	3	P
CO3	Implement programs for decision control structures, loops, and arrays.	3	P
CO4	Implement concepts of structure, pointer and user defined function.	3	P
CO5	Write programs using graphics and file handling operations.	3	P

Subject Code: KCA151													
Subject Name: Problem Solving Using C													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	-	2	-	-	-	-	1	-	-	-	1	1	3	-
CO2	3	2	-	-	-	-	2	-	-	-	1	1	3	-
CO3	3	2	-	-	-	-	2	-	-	-	1	1	3	-
CO4	3	2	-	-	-	-	2	-	-	-	1	1	3	-
CO5	3	2	-	-	-	-	2	-	-	-	1	1	3	-
PO Target	3	2	-	-	-	-	1.8	-	-	-	1	1	3	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA-152			
Subject Name: Computer Organization & Architecture Lab			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Examine the output of the basic logic gates for different combinations of input.	3	P
CO2	Demonstrate various combinational circuits for binary arithmetic operations and code converter	3	P
CO3	Illustrate combinational circuits and sequential circuits such as encoders/decoders, multiplexers/de-multiplexers, and flip-flops	3	P
CO4	Implement 2-bit Arithmetic Logic Unit using logic gates and multiplexers	3	P

Subject Code: KCA-152														
Subject Name: Computer Organization & Architecture Lab														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	2	-	-	-	-	2	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	1	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	1	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	1	-	-	-	-	-	-	-
PO Target	3	2	-	-	-	-	1.25	-	-	-	-	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA201			
Theory of Automata & Formal Languages			
CO	Statement of Course Outcome	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Construct DFA, NFA with their minimization and conversion.	5	C
CO2	Implement regular expressions with closure and decision properties.	3	P
CO3	Represent the Context Free Languages grammar and its normal forms.	3	C
CO4	Design the PDA with deterministic and Nondeterministic properties	5	P
CO5	Construct the Universal Turing machine.	5	M

Subject Code: KCA201														
Theory of Automata & Formal Languages														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	-	-
PO Target	3	3	-	-	-	-	-	-	-	-	-	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA202			
Object Oriented Programming			
CO	Statement of Course Outcome	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Express the basic Programming concepts using Java.	3	P
CO2	Analyse OOP concepts like Inheritance, Polymorphism, Abstraction and Encapsulation etc. using Java.	3	P
CO3	Apply exception handling and file handling in Java.	3	P
CO4	Apply the concepts of multithreading and generic programming in Java.	3	P
CO5	Design GUI applications using AWT and Swing in Java.	6	P

Subject Code: KCA202													
Object Oriented Programming													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	2	1	-	-	-	-	-	-	-	-	-	-	1	–
CO2	3	3	3	-	2	-	3	2	-	-	-	-	3	1
CO3	2	1	2	-	2	-	2	1	-	-	-	-	2	1
CO4	2	1	2	-	2	-	2	1	-	-	-	-	2	1
CO5	1	1	1	-	2	-	2	2	-	-	-	1	-	2
PO Target	2	1.4	2	-	2	-	2.2	1.5	-	-	-	1	2	1.2

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA203			
Operating Systems			
CO	Statement of Course Outcome	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Explain main components, services, types, and structure of Operating Systems.	2	C
CO2	Compare and apply various CPU scheduling algorithms for process execution.	3	P
CO3	Apply the various algorithms and techniques to handle the various concurrency control issues.	3	P
CO4	Identify occurrence of deadlock and describe ways to handle it.	3	P
CO5	Explain and apply various memory, I/O and disk management techniques.	3	P

Subject Code: KCA203														
Operating Systems														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-	-	-
PO Target	2.4	1.5	–	–	–	–	–	–	–	–	–	–	–	–

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA204			
Database Management Systems			
CO	Statement of Course Outcome	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand overall structure of DBMS, construct ER Models for efficient Database Design	3	P
CO2	Understand basic concepts of relational model and formulate solutions to a query problem using SQL commands, relational algebra, tuple calculus and domain calculus	3	P
CO3	Explain the need of Normalization and normalize a given relation to the desired normal form	4	P
CO4	Describe need of transaction processing and recovery mechanism from transaction failures	3	P
CO5	Understand various concurrency control techniques and able to apply concurrency control protocols on transactions.	3	P

Subject Code: KCA204														
Database Management Systems														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	2	2	–	3	–	–	–	–	–	–	–	–	3
CO2	3	2	1	–	3	–	–	–	–	–	–	–	–	3
CO3	3	3	3	–	2	–	–	–	–	–	–	–	–	3
CO4	1	1	–	–	–	–	–	–	–	–	–	–	–	–
CO5	2	1	2	–	–	–	–	–	–	–	–	–	–	–
PO Target	2.4	1.8	2	–	2.6	–	–	–	–	–	–	–	–	3

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA205			
DA&AA			
CO	Statement of Course Outcome	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Explain the concept of data structure, abstract data types, algorithms, analysis of algorithms and basic data organization schemes such as arrays and linked lists.	2	C
CO2	Describe the applications of stacks and queues and implement various operations on them using arrays and linked lists.	2	C
CO3	Describe the properties of graphs and trees and implement various operations such as searching and traversal on them.	3	P
CO4	Compare incremental and divide-and-conquer approaches of designing algorithms for problems such as sorting and searching.	3	C
CO5	Apply and analyze various design approaches such as Divide-and-Conquer, greedy and dynamic for problem solving .	3	C

Subject Code: KCA205														
DA&AA														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	–	–	1	–	–		–	–	–	–	–	–	–	–
CO2	–	–	3	–	–	2	–	–	–	2	–	–	–	1
CO3	–	–	3	–	–		–	–	–	2	–	–	–	1
CO4	–	–	3	–	–	2	–	–	–	3	–	–	–	1
CO5	–	–	3	–	–	2	–	–	–	3	–	–	–	1
PO Target	–	–	2.6	–	–	2	–	–	–	2.5	–	–	–	1

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA251			
Object Oriented Programming Lab			
CO	Statement of Course Outcome	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO-1	Write and execute programs in a Java programming environment.	3	P
CO-2	Write and execute Object Oriented Programs using Java programming	4	P
CO-3	Write robust file handling and Object-Oriented Programs with excepting handling approach using Java programming.	3	P
CO-4	Write Object Oriented Programs with multi-threading and generic programming approach using Java programming.	3	P
CO-5	Design GUI application with AWT and Swing using Java programming	5	P

Subject Code: KCA251													
Object Oriented Programming Lab													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	3	–	–	–	–	–	–	–	–	–	–	3	–
CO2	3	3	3	–	2	–	2	–	–	–	–	–	3	1
CO3	3	3	3	–	2	–	2	–	–	–	–	–	3	1
CO4	3	3	3	–	2	–	2	–	–	–	–	–	3	1
CO5	2	2	2	–	2	–	1	–	–	–	–	–	–	2
PO Target	2.8	2.8	2.75	–	2	–	1.75	–	–	–	–	–	3	1.25

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Subject Code: KCA252			
DBMS Lab			
CO	Statement of Course Outcome	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Design ER models using Case Tools	3	P
CO2	Write SQL Commands to query a database	3	P
CO3	Write PL/ SQL Programs for implementing stored procedures, stored functions, cursors, triggers and packages	3	P

Subject Code: KCA252														
DBMS Lab														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	–	–	–	–	3	–	–	–	–	–	–	–	–	3
CO2	–	–	–	–	3	–	–	–	–	–	–	–	–	3
CO3	–	–	–	–	3	–	–	–	–	–	–	–	–	3
PO Target	–	–	–	–	3	–	–	–	–	–	–	–	–	3

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA253			
Data Structures & Analysis of Algorithms Lab			
CO	Statement of Course Outcome	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Write and execute programs to implement various searching and sorting algorithms.	3	P
CO2	Write and execute programs to implement various operations on two- dimensional arrays.	3	P
CO3	Implement various operations of Stacks and Queues using both arrays and linked lists data structures.	3	P
CO4	Implement graph algorithm to solve the problem of minimum spanning tree	3	P

Subject Code: KCA253													
Data Structures & Analysis of Algorithms Lab													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	3	–	–	–	–	–	–	–	–	–	–	3	2
CO2	3	3	–	–	–	–	–	–	–	–	–	–	3	2
CO3	3	3	–	–	–	–	–	–	–	–	–	–	3	3
CO4	3	3	–	–	–	–	–	–	–	–	–	–	3	3
PO Target	3	3	–	–	–	–	–	–	–	–	–	–	3	2.5

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCAA01			
Cyber Security			
CO	Statement of Course Outcome	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand the importance of Information, Information System and need of security threat countermeasures.	2	C
CO2	Understand information repositories and related threats to them.	2	C
CO3	Elaborate Information System based activities and concerned data for suggesting possible threats appear to them.	3	P
CO4	Clarify the need of framing the required security policy for safeguarding the Information System under the use.	3	C
CO5	Characterize the legal provisions available in India and internationally for protecting intellectual properties.	3	C

Subject Code: KCAA01													
Cyber Security													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	–	–	1	–	–	–	–	–	–	–	–	–	–	–
CO2	–	–	3	–	–	2	–	–	–	2	–	–	–	1
CO3	–	–	3	–	–		–	–	–	2	–	–	–	1
CO4	–	–	3	–	–	2	–	–	–	3	–	–	–	1
CO5	–	–	3	–	–	2	–	–	–	3	–	–	–	1
PO Target	–	–	2.6	–	–	2	–	–	–	2.5	–	–	–	1

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA301			
Subject Name: Artificial Intelligence			
Tagging COs with BLs & KCs			
CO	CO Statement	Bloom Level	Knowledge Category
CO-1	Describe knowledge of the building blocks of AI as presented in terms of intelligent agents.	2	C
CO-2	Sketch the problem as state space graph with various searching techniques to solve a specific problem.	3	P
CO-3	Demonstrate knowledge and its representation in real world with logical reasoning steps.	3	P
CO-4	Construct AI algorithm for real world problems with different machine learning techniques.	3	P
CO-5	Illustrate knowledge about state-of-the-art algorithms used in pattern recognition area.	3	P

Subject Code: KCA 301													
Subject Name: Artificial Intelligence													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	2	3	-	-	-	-	-	-	-	-	2	-
CO3	3	3	2	2	2	-	-	-	-	-	-	-	-	-
CO4	3	3	2	2	2	-	-	-	-	-	-	-	2	-
CO5	3	3	3	2	2	-	-	-	-	-	-	-	1	-
PO Target	3	3	2.25	2.25	2	-	-	-	-	-	-	-	1.67	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA302			
Subject Name: Software Engineering			
Tagging of COs with BLs and KCs			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Describe Software Engineering Concepts and SDLC models.	2	C
CO2	Prepare Software Requirement Specification (SRS) with modelling tools and Quality standards.	3	C
CO3	Analyse design concepts to software development with software metrics methods.	4	P
CO4	Explore software testing techniques and its implementation.	4	P
CO5	Explain Software project management activities with its parameters such as cost, efforts, schedule and duration.	3	C

Subject Code: KCA302														
Subject Name: Software Engineering														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	2	2	2	-	-	-	1	-	-	-	1	-	-	1
CO2	2	2	2	-	-	1	2	-	2	-	2	-	-	2
CO3	3	3	1	-	-	-	2	-	1	-	2	-	-	2
CO4	-	-	1	-	-	-	2	-	-	-	1	-	-	1
CO5	-	1	1	1	2	-	3	2	-	-	-	-	-	1
PO Target	2.3	2	1.4	1	2	1	2	2	1.5	-	1.5	-	-	1.4

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA303			
Subject Name: Computer Network			
Tagging of COs with BLs and KCs			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Describe communication models TCP/IP, ISO-OSI model, network topologies along with communicating devices and connecting media.	2	C
CO2	Apply knowledge of error detection, correction and learn concepts of flow control along with error control.	3	P
CO3	Apply IP addressing techniques, subnetting along with network routing protocols and algorithms.	3	P
CO4	Explore transport layer protocols and their layout along with congestion control to maintain Quality of Service.	3	P
CO5	Understand applications-layer protocols and elementary standards of cryptography & network security.	2	C

Subject Code: KCA303														
Subject Name: Computer Network														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	-	-	-	-	-	2	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	1	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	2	-	-	-	-	-	-	-
CO4	2	1	-	-	-	1	1	-	-	-	-	-	-	-
CO5	2	1	-	-	-	1	1	-	-	-	-	-	-	-
PO Target	2.6	1.5	-	-	-	1	1.4	-	-	-	-	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA351			
Subject Name: Artificial Intelligence Lab			
Tagging COs with BLs & KCs			
CO	CO Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Develop AI Game problems using Python such as Water-Jug and Missionaries-Cannibal	3	P
CO2	Analyse AI searching algorithms such as BFS & DFS using python	4	P
CO3	Implement Knowledge representation techniques using Pytholog library	3	P
CO4	Demonstrate machine learning algorithms of Classification & Clustering techniques	3	P

Subject Code: KCA351													
Subject Name: Artificial Intelligence Lab													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	1	2	–	–	2	–	–	–	–	–	1	–	2	–
CO2	1	2	–	–	2	–	–	–	–	–	1	–	2	–
CO3	1	2	–	–	2	–	–	–	–	–	1	–	2	–
CO4	1	2	1	1	2	–	–	–	–	–	2	–	2	–
PO Target	1	2	1	1	2	–	–	–	–	–	1.25	–	2	–

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA352			
Subject Name: SE LAB			
Tagging of COs with BLs and KCs			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Prepare a SRS document in line with the IEEE recommended standards.	3	M
CO2	Sketch the graphic representation of various UML diagrams using designing tools.	3	M
CO3	Prepare test cases for given problem.	4	M

Subject Code: KCA352														
Subject Name: SE LAB														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	2	3	–	–	–	–	–	–	3	–	2	–	–	2
CO2	3	3	2	1	2	–	–	–	3	–	2	–	–	2
CO3	2	1	2		2	–	3	–	3	–	2	3	–	3
PO Target	2.33	2.33	2	1	2	–	3	–	3	–	2	3	–	2.33

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA014			
Subject Name: Cloud Computing			
Tagging of COs with BLs and KCs			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Illustrate the concepts of Cloud Computing, key technologies, strengths, and limitations of cloud computing.	3	P
CO2	Apply cloud computing driven commercial systems such as AWS and other business cloud applications in real life.	3	P
CO3	Analyze the knowledge and applications of cloud computing in business, education and in personal.	4	P
CO4	Connect with the concept of virtualization in cloud computing.	4	P
CO5	Discuss the security and privacy issues in cloud computing	2	C

Subject Code: KCA014													
Subject Name: Cloud Computing													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	–	–	1	–	1	–	1	–	–	–	–	1	–	1
CO2	–	–	1	–	1	–	2	–	–	–	–	2	–	2
CO3	–	–	2	–	2	–	2	–	–	–	–	2	–	2
CO4	–	–	1	–	1	–	2	–	–	–	–	1	–	1
CO5	–	–	2	–	3	–	2	–	–	–	–	3	–	3
PO Target	–	–	1.4	–	1.6	–	1.8	–	–	–	–	1.8	–	1.8

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA021			
Subject Name: Web Technology			
Tagging of COs with BLs and KCs			
CO	Statement	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Construct static web pages using HTML and CSS.	Apply	C,P
CO2	Develop interactive web page using JavaScript.	Apply	C,P
CO3	Develop dynamic web applications using servlet and JSP.	Apply	C,P
CO4	Illustrate Spring-based Java applications using Java configuration, XML configuration, annotation-based configuration, beans and their scopes, and properties.	Analyze	C,P
CO5	Test web services using Spring Boot and REST API	Evaluate	C,P

Subject Code: KCA021														
Subject Name: Web Technology														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	–	2	3	3	1	2	2	1	2	3	2	–	3
CO2	3	2	3	3	3	–	3	1	1	1	3	2	–	3
CO3	3	2	3	3	3	–	3	1	1	1	3	2	–	3
CO4	3	2	3	3	3	–	3	1	1	1	3	2	–	3
CO5	2	–	1	–	–	2	1	–	2	2	1	–	–	1
PO Target	2.8	2	2.4	3	3	1.5	2.4	1.25	1.2	1.4	2.6	2	–	2.6

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA 353			
Subject Name: Mini Project			
Tagging COs with BLs & KCs			
CO	Statement of Course Outcome	BL	KC
		(1,2,3,4,5,6)	(F,C,P,M)
CO1	Demonstrate the software project using life cycle models.	3	P
CO2	Plan the SRS document as per project requirements.	4	P
CO3	Apply suitable design technique for designing software	3	P
CO4	Analyse the project by using a programming language.	4	P
CO5	Design report and able to present their work	3	P

Subject Code: KCA 353													
Subject Name: Mini Project													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	1	2	2	–	–	–	3	–	1	–	–	3	–	3
CO2	1	2	1	–	–	–	3	–	3	–	–	3	–	3
CO3	2	2	2	–	–	–	3	–	2	–	–	3	–	3
CO4	3	2	2	–	–	–	3	–	2	–	–	3	–	3
CO5	1	1	2	–	–	–	3	–	3	–	–	3	–	3
PO Target	1.6	1.8	1.8	–	–	–	3	–	2.2	–	–	3	–	3

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA-054			
Subject Name: Machine Learning			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand the machine learning along with their real time application.	2	C
CO2	Understand the various types of learning algorithms along with their application in real time problem solving.	2	C
CO3	Sketch the problem with handcraft features and understand the decision tree learning and instance-based learning technique.	3	P
CO4	Illustrate knowledge about artificial neural networks and deep learning.	3	P
CO5	Demonstrate the knowledge of reinforcement learning and its application.	3	P

Subject Code: KCA054													
Subject Name: Machine Learning													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	1	-	-	-	-	-	-	-	-	2	-	-	-	-
CO2	2	1	1	1	-	-	1	–	-	1	1	2	2	-
CO3	2	2	2	1	-	-	2	1	-	-	2	-	2	-
CO4	2	2	1	2	2	-	1	2	-	2	1	1	-	-
CO5	1	1	1	2	2	-	1	2	-	1	-	-	2	1
PO Target	1.6	1.5	1.2	1.5	2.0	-	1.2	1.6	-	1.5	1.3	1.5	2.0	1.0

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA051			
Subject Name: Mobile Computing			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO 1	Understand the fundamentals of mobile computing.	2	P
CO 2	Explain wireless networking protocols, applications and environment.	2	P
CO 3	Elaborate data management issues in mobile computing.	2	P
CO 4	Review security and Transaction issues in mobile computing environment.	2	P
CO 5	Examine MANET routing protocols.	4	P

Subject Code: KCA051														
Subject Name: Mobile Computing														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	-	-	-	-	-	2	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	1	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	2	-	-	-	-	-	-	-
CO4	2	1	-	-	-	1	1	-	-	-	-	-	-	-
CO5	2	1	-	-	-	1	1	-	-	-	-	-	-	-
PO Target	2.6	1.5	-	-	-	1	1.4	-	-	-	-	-	-	-

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA-035			
Subject Name: Software Quality Engineering			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand basic concepts of Software Quality along with its documents and process	2	F, C
CO2	Apply knowledge of Software Quality in terms on Metrics & Measurement	3	F, C, P
CO3	Choose Software Reliability models for Quality Assessment	3	F, C, P
CO4	Illustrate the software Quality Planning and Assurance	3	F, C, P
CO5	Use Static and Dynamic Testing techniques during software implementation	3	F, C, P

Subject Code: KCA-035														
Subject Name: Software Quality Engineering														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	1		–	–		–	–	–	1	–	–	–	–	–
CO2	1	3	–	–	2	–	–	–	–	–	–	–	–	–
CO3	2	2	–	–	1	–	–	–	–	–	–	–	–	–
CO4	–	1	–	1	1	–	–	–	–	–	–	–	–	–
CO5	2	1	3	–	3	–	–	–	–	–	–	–	3	–
PO Target	1.5	1.75	3	1	1.75	–	–	–	1	–	–	–	3	–

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA031			
Subject Name: Privacy and Security in Online Social Media			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand working of online social networks.	2	C
CO2	Describe trust management in online social media.	2	C
CO3	Compare counter measures to control information sharing in Online social networks.	2	C
CO4	Explain knowledge of identity management in Online social networks.	2	C
CO5	Apply privacy and security issues of OSN such as Facebook, Instagram, twitter and LinkedIn.	3	C

Subject Code: KCA031													
Subject Name: Privacy and Security in Online Social Media													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	–	1	–	2		–	–	1	–	–	–	–	–	–
CO2	–	2	–	3	2	–	2	1	–	2	–	–	–	–
CO3	–	2	–	3	2	–	2	1	–	2	–	–	–	–
CO4	–	2	–	3	2	–	2	1	–	2	–	–	–	–
CO5	–	2	–		2	–	2	–	3	–	–	–	–	–
PO Target	–	1.8	–	2.75	2	–	2	1	3	2	–	–	–	–

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA041			
Subject Name: Blockchain Architecture			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand basic concepts of blockchain architecture	2	C
CO2	Understand various requirements for consensus protocols.	2	C
CO3	Apply the consensus process using Hyperledger Fabric.	3	P
CO4	Analyze various use cases in financial software	4	C
CO5	Analyze various use cases in Government record keeping and supply chain.	4	C

Subject Code: KCA041														
Subject Name: Blockchain Architecture														
CO-PO/APO Matrix														
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	3	-	-	-	-	1	2	-	-	-	-	-	-	-
CO2	3	2	-	-	-	2	1	-	-	-	-	-	-	-
CO3	3	2	-	-	2	1	1	-	-	-	-	-	-	2
CO4	2	1	-	1	1	1	2	-	-	-	-	-	-	1
CO5	2	1	-	1	1	1	2	-	-	-	-	-	-	1
PO Target	2.6	1.5	-	1	1.3	1.2	1.6	-	-	-	-	-	-	1.3

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA043			
Subject Name: Internet of Things			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Discuss the architecture and components of Internet of Things.	2	C
CO2	Discuss IoT enable Technologies, their challenges and paradigm.	2	C
CO3	Explore Transport layer protocols & communication models of IoT.	3	C
CO4	Analyse the pin diagram of Arduino and Raspberry Pi along with sensors and their interfaces.	4	P
CO5	Examine python programming modules and packages for communication among IoT Devices.	4	P

Subject Code: KCA043													
Subject Name: Internet of Things													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	2	–	–	3	–	–	2	–	–	–	–	–	–	–
CO2	2	3	2	3	–	2	2	–	–	2	–	–	–	–
CO3	3	–	–	1	–	–	1	–	–	–	–	–	–	–
CO4	3	1	1	–	3	–	3	–	–	1	1	2	–	3
CO5	3	3	1	3	3	–	3	–	–	1	1	2	–	3
PO Target	2.6	2.33	1.33	2.5	3	2	2.2	–	–	1.33	1	2	–	3

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Course Outcomes and Mapping of CO-PO, AY 2023-24

Subject Code: KCA451			
Subject Name: Project			
Tagging of COs with BLs and KCs			
CO	Statement	BL (1,2,3,4,5,6)	KC (F,C,P,M)
CO1	Understand the current scenario of technologies	2	C
CO2	Illustrate the concept of SDLC	3	C
CO3	Demonstrate effective use of written/verbal communication through Documentation and Report Writing as per University & Industry standards.	3	C
CO4	Create a project with consideration of customer requirements and the goals	6	P
CO5	Evaluate the project with proper testing techniques.	4	P

Subject Code: KCA451													
Subject Name: Project													
CO-PO/APO Matrix													
CO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	APO 1	APO2
CO1	–	–	–	2	3	3	1	–	–	–	–	1	1	1
CO2	–	–	–	3	1	3	2	–	–	3	–	1	3	3
CO3	–	–	–	2	1	3	–	3	3	3	–	1	2	1
CO4	–	–	–	1	–	3	3	–	–	–	–	1	–	–
CO5	–	–	–	–	–	3	–	–	–	–	–	3	–	–
PO Target	–	–	–	2	1.67	3	2	–	–	–	–	1.4	2	1.6

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