Course Outcome

Session 2020-21

Department of Computer Science & Information Technology

Index

4th Semester		
S No.	**Subject Code**	**Subject Name**
1	KOE048	Electronics Engineering
2	KVE401	Universal Human Values
3	KCS402	Theory of Automata & Formal Language
4	KCS401	Operating System
5	KCS403	Microprocessor
6	KNC402	Python Programming
7	KCS451	Operating Systems Lab
8	KCS452	Microprocessor Lab
9	KCS453	Python Programming Lab

6th Semester		
S No.	**Subject Code**	**Subject Name**
1	KCS601	Software Engineering
2	KIT601	Data Analytics
3	KCS603	Computer Networks
4	KIT061	Blockchain Architecture Design
5	KOE061	Real Time Systems
6	KNC601	Constitution of India, Law and Engineering
7	KCS651	Software Engineering Lab
8	KIT651	Data Analytics Lab
9	KCS653	Computer Networks Lab

CO PO and Mapping of CO PO 2nd Year

(2019-2023 BATCH)

Session:- 2020-21 Semester:- 4th

S.No.	Subject	Code
1	Electronics Engineering	KOE048
2	Universal Human Values	KVE401
3	Theory of Automata & Formal Language	KCS402
4	Operating System	KCS401
5	Microprocessor	KCS403
6	Python Programming	KNC402
7	Operating Systems Lab	KCS451
8	Microprocessor Lab	KCS452
9	Python Programming Lab	KCS453

Theory

Electronics Engineering	CO1	Study the construction and working of a p-n junction diode,	K1,K2
	CO2	Understand its applications like rectifiers, clippers, clampers and voltage multipliers.	K3
	CO3	Learn the basic construction, working and characteristics of BJT and FET and analysis of transistor amplifiers.	K4
	CO4	Understand the basic concepts of operational amplifier and its applications.	K4,K5
	CO5	Study the measuring instruments –Digital Voltmeter, Digital Multimeter and CRO, and learn the measurement of amplitude, phase and frequency with the help of these instruments.	K5,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	2	-	3	-	1	-	-	-	-	1	3	3
CO2	3	3	2	-	3	-	1	-	-	-	-	1	3	3
CO3	3	3	2	-	3	-	1	-	-	-	-	1	3	3
CO4	3	3	2	-	3	-	1	-	-	-	-	1	3	3
CO5	3	3	2	-	3	-	1	-	-	-	-	1	3	3

Universal Human Values	CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society	K1,K2
	CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.	K1,K2
	CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.	K2,K4
	CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	K2,K4
	CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	K2,K3

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	1	2	2	2	2	2	3	3	2	1	3	1	1
CO2	2	1	2	2	2	2	3	3	2	2	1	3	1	1
CO3	2	1	2	3	3	2	3	3	2	2	1	3	1	1
CO4	2	1	2	2	2	3	3	3	3	2	1	3	1	1
CO5	2	1	2	3	3	2	3	3	3	2	1	3	1	1

Theory of Automata & Formal Language	CO1	Acquire a full understanding and applicability of Automata Theory as the basis of all computer science languages design	K1,K2
	CO2	Identify different formal language and design the recognizer for regular languages to establish their applicability in real life.	K3
	CO3	Ability to analyze & Design grammars for different formal languages	K4
	CO4	Understand the designing of Pushdown Automata and Turing machines	K4,K5
	CO5	Determine the decidability and intractability of computational problems	K5,K6

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	2	2	2	1					1	1	1	2	2
CO2	2	3	3	2	1					1	1	1	2	2
CO3	2	2	3	3	1					1	1	1	2	2
CO4	2	3	3	2	1					1	1	1	1	1
CO5	1	3	2	3	1					1	1	1	1	1

Operating System	CO1	Illustrate the need, evolution, various categories and design issues of operating systems.	K2,K3
	CO2	Analyze the problems related to concurrency and the different synchronization mechanism available.	K4
	CO3	Apply the techniques used to implement processes and threads as well as the different algorithms for process scheduling.	K5
	CO4	Analyze the various memory management techniques for memory allocation and concept of virtual memory.	K4
	CO5	Understand the Security issues, I/O management, Disk management and file system structure in operating systems.	K2,K3

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	2	1	1	1	1	1	3	3	3
CO2	3	3	2	3	2	2	2	1	1	1	1	3	3	3
CO3	3	3	3	3	3	3	1	1	1	1	1	3	3	3
CO4	3	3	2	3	2	3	3	2	1	1	2	3	3	3
CO5	3	2	2	2	2	3	3	2	1	1	2	3	3	3

Microprocessor	CO1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.	K3
	CO2	Analyze the s/w & h/w structure of the 8085 Microprocessor and analyze its properties.	K4
	CO3	Analyze the s/w & h/w structure of the 8086 Microprocessor and analyze its properties.	K4
	CO4	Implement the basic operations of microprocessors using assembly programming and design the solution of programming problems	K3,K5
	CO5	Illustrate how the different peripherals are interfaced with Microprocessor (8085/8086) and the data transfer information through serial & parallel ports.	K4,K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	1	3									1	1	1
CO2	3	3	3		2							1	1	1
CO3	3	3	3		2							1	1	1
CO4	3	3	3	3	2							1	1	2
CO5	3	3	3	3	2							1	1	2

Python Programming	CO1	Understand and write simple Python programs	K2
	CO2	Develop Python programs with conditionals and loops.	K4,K5
	CO3	Design python functions and to use Python data structures –- lists, tuples, dictionaries	K4
	CO4	Perform input/output with files in Python and to apply OOPs concepts in python	K4,K5
	CO5	To apply searching ,sorting and merging in Python	K3

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	1	2	1	3	-	-	-	-	-	-	1	1	1
CO2	3	2	2	2	3	-	-	-	-	-	-	2	2	2
CO3	3	3	2	2	3	-	-	-	-	-	-	2	2	2
CO4	3	2	2	2	3	-	-	-	-	-	-	2	2	2
CO5	3	2	2	3	3	-	-	-	-	-	-	2	2	2

Practical

Operating Systems Lab	CO1	Implement the basic command of OS and will execute the various system calls.
	CO2	Implement the process synchronization problem using semaphore.
	CO3	Implement CPU scheduling algorithm for process scheduling and deadlock management techniques.
	CO4	Implement memory management techniques.
	CO5	Implement file storage allocation techniques.

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	2	1	1	1	1	1	3	3	3
CO2	3	3	2	3	2	2	2	1	1	1	1	3	3	3
CO3	3	3	3	3	3	1	1	1	1	1	1	3	3	3
CO4	3	3	2	3	2	3	3	2	1	1	2	3	3	3
CO5	3	2	2	2	2	3	3	2	1	1	2	3	3	3

Microprocessor Lab	CO1	Discuss the architecture and instruction set of 8085 microprocessor	K2
	CO2	Simulate and implment the logical and arithmetic operations on the given numbers using 8085 microprocessor.	K3
	CO3	Simulate and implment the searching and sorting on an given array of elements using 8085 microprocessor.	K3
	CO4	Simulate and implment the code conversion (ASCII to Hexadecimal and vice versa) using 8085 microprocessor.	K3
	CO5	Simulate and implment to check whether the given number is a prime using 8085 microprocessor.	K3

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	1	1	1	1	1					1	1	1
CO2	3	3	3	2	3	1	1					1	1	1
CO3	3	3	2	2	3	1	1					1	1	1
CO4	3	3	2	2	3	1	1					1	1	1
CO5	3	3	2	2	3	1	1					1	1	1

Python Programming Lab	CO1	Understand basic syntax of python implementation	K2
	CO2	Practically apply looping and conditional constructs	K3
	CO3	Develop programs related with list data structure.	K4,K5
	CO4	Design programs related to tuples, dictionary and set	K4
	CO5	Apply searching ,sorting and merging in Python	K3

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	1	2	1	3	-	-	-	-	-	-	1	1	1
CO2	3	2	2	2	3	-	-	-	-	-	-	2	2	2
CO3	3	3	2	2	3	-	-	-	-	-	-	2	2	2
CO4	3	2	2	2	3	-	-	-	-	-	-	2	2	2
CO5	3	2	2	3	3	-	-	-	-	-	-	2	2	2

CO PO and Mapping of CO PO 3rd Year

(2018-2022 BATCH)

Session:- 2020-21 Semester:- 6th

S.No.	Subject	Code
1	Software Engineering	KCS601
2	Data Analytics	KIT601
3	Computer Networks	KCS603
4	Blockchain Architecture Design	KIT061
5	Real Time Systems	KOE061
6	Constitution of India, Law and Engineering	KNC601
7	SE Lab	KCS651
8	Data Analytics Lab	KIT651
9	Computer Networks Lab	KCS653

Theory

Software Engineering	CO1	Explain various software characteristics and analyze different software Development Models	K1,K2
	CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards .	K1,K2
	CO3	Compare and contrast various methods for software design.	K2,K3
	CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing .	K3
	CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis.	K5

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	2	3	2	2	1	1		1	3	3	3
CO2	3	3	3	3	3	2	2		1		1	3	3	3
CO3	3	3	3	3	3	2	2		1		1	2	3	3
CO4	3	3	3	3	3	2	2		1		1	1	3	3
CO5	3	3	3	3	3	2	2		1		1	1	3	3

Data Analytics	CO1	Discuss various concepts of data analytics pipeline	K1, K2
	CO2	Apply classification and regression techniques.	K3
	CO3	Explain and apply mining techniques on streaming data.	K2,K3
	CO4	Compare different clustering and frequent pattern mining algorithms	K4
	CO5	Describe the concept of Python programming and implement analytics on Big data using python.	K2,K3

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	2					2	3	3	3
CO2	3	3	3	3	3	2					1	1	2	2
CO3	3	3	3	3	3	2					1	1	3	3
CO4	3	3	3	3	3	2					1	1	2	2
CO5	3	3	3	3	3	2					1	3	3	3

Computer Networks	CO1	Build an understanding of the fundamental concepts and Layered Architecture of computer networking.	K1,K2
	CO2	Understand the basic concepts of link layer properties to detect error and develop the solution for error control and flow control.	K2, K3
	CO3	Design, calculate, and apply subnet masks and addresses to fulfill networking requirements and calculate distance among routers in subnet.	K3,K4, K5
	CO4	Understanding the duties of transport layer, session layer and presentation layer and also focus on network security issues to secure communication towards society.	K2, K3, K4
	CO5	Understand the features and operations of various application layer protocols such as DNS, HTTP, FTP, e-mail protocols and other applications.	K1,K2

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	2	3	3	3	3	3	3	3	2	3	3
CO4	3	2	2	2	3	2	3	3	3	3	3	2	3	3
CO5	3	2	2	3	3	2	2	2	3	2	3	2	3	3

Blockchain Architecture Design	CO1	Describe the basic understanding of Blockchain architecture along with its primitive.	K1,K2
	CO2	Explain the requirements for basic protocol along with scalability aspects	K2, K3
	CO3	Design and deploy the consensus process using frontend and backend	K2,K3
	CO4	Apply Blockchain techniques for different use cases like Finance and Trade/Supply	K3,K4, K5
	CO5	.Apply Blockchain techniques for different use cases of Government activities	K3, K4,K5

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	1	2	1	3	3	2	2	1	2	2	2	2
CO2	3	3	2	3	3	2	2	2	2	1	2	3	2	2
CO3	3	2	3	3	3	2	3	2	2	2	3	2	3	3
CO4	3	3	3	3	3	1	3	2	2	1	2	2	3	3
CO5	3	3	3	3	3	1	3	2	2	1	2	2	3	3

Real Time Systems	CO1	Describe concepts of Real-Time systems and modeling.	K1,K2
	CO2	Recognize, and apply the characteristics of a real-time system in context with real time scheduling.	K2,K3
	CO3	Classify and analyze various resource sharing mechanisms and their related protocols.	K2,K4
	CO4	Interpret the basics of real time communication by the knowledge of real time models and protocols.	K3,K5
	CO5	Apply the basics of RTOS in interpretation of real time systems.	K3,K5

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	2	2	2	2			2	2	2	3	3	3
CO2	3	3	3	3	3	3			2	2	1	3	3	3
CO3	3	3	3	3	3	3	2		2	2	2	3	3	3
CO4	3	3	3	3	3	3	2	2	2	2	1	3	3	3
CO5	3	3	3	3	3	3	2	2	2	2	1	3	3	3

Constitution of India, Law and Engineering	CO1	Identify and explore the basic features and modalities about Indian constitution.	K1,K2
	CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.	K2,K3
	CO3	Demonstrate different aspects of Indian Legal System and its related bodies.	K2,K3
	CO4	Discover and apply different laws and regulations related to engineering practices.	K1,K2, K3
	CO5	Interpret and evaluate the role of engineers with different organizations and governance models	K2, K5

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	1	1	1	1	1	2	2	2	1	1	1	1	1	1
CO2	1	1	1	1	2	2	2	1	2	1	1	2	2	1
CO3	1	1	1	2	1	1	2	1	2	1	1	2	1	1
CO4	1	1	1	3	2	2	2	2	1	1	1	2	2	1
CO5	1	1	1	3	2	2	2	2	2	1	1	2	2	1

Practical

Computer Networks Lab	CO1	Understand the fundamental concepts of computer networking and Network topologies.	K1,K2
	CO2	Know about different types of network devices and design, implement, and analyze simple computer networks.	K3, K4
	CO3	Learn the basic network commands and use techniques, skills, and modern networking tools necessary for engineering practice	K3,K4, K5
	CO4	Formulate problems and their solutions, think creatively and communicate effectively.	K4, K5, K6
	CO5	Describe how rapid progress of computer network technology can impact on the society and continue to advance personal knowledge and understanding.	K3, K4

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	2	1	2	1	3	3	2	3	3	3	1	3	3
CO2	3	2	3	2	1	2	3	2	2	2	3	3	3	3
CO3	3	2	3	1	3	1	2	3	2	2	2	3	3	3
CO4	2	1	3	2	3	1	2	2	3	3	2	2	3	3
CO5	3	1	2	2	2	3	2	2	3	2	2	2	3	3

SE Lab	CO1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement	K2,K4
	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	K3,K5
	CO3	Draw a class diagram after identifying classes and association among them	K4,K5
	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	K4,K5
	CO5	Able to use modern engineering tools for specification, design, implementation and testing	K3,K4

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	2	3	2	2	1	1		1	3	3	3
CO2	3	3	3	3	3	2	2		1		1	3	3	3
CO3	3	3	3	3	3	2	2		1		1	2	3	3
CO4	3	3	3	3	3	2	2		1		1	1	3	3
CO5	3	3	3	3	3	2	2		1		1	1	3	3

Data Analytics Lab	CO1	Implement numerical and statistical analysis on various data sources.	K2,K4
	CO2	Apply data preprocessing and dimensionality reduction methods on raw data.	K3,K5
	CO3	Implement linear regression technique on numeric data for prediction.	K3,K4
	CO4	Execute clustering and association rule mining algorithms on different datasets	K4,K5
	CO5	Implement and evaluate the performance of KNN algorithm on different datasets.	K3,K4

CO \ PO Mpping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	2					2	3	3	3
CO2	3	3	3	3	3	2					1	1	2	2
CO3	3	3	3	3	3	2					1	1	3	3
CO4	3	3	3	3	3	2					1	1	2	2
CO5	3	3	3	3	3	2					1	3	3	3