KIET GROUP OF INSTITUTIONS, GHAZIABAD

Department of Computer Science and Information Technology

Course Outcome

Session 2021-22

Department of Computer Science and Information Technology

13 KM STONE, GHAZIABAD-MEERUT ROAD, GHAZIABAD – 201206

Website: www.kiet.edu

KIET GROUP OF INSTITUTIONS, GHAZIABAD

Department of Computer Science and Information Technology

Index

4th Semester		
S No.	**Subject Code**	**Subject Name**
1	KOE044	Sensor & Instrumentation
2	KAS401	Technical Communication
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	KOE068	Software Project Management
6	KNC602	Indian Tradition, Culture and Society
7	KCS651	Software Engineering Lab
8	KIT651	Data Analytics Lab
9	KCS653	Computer Networks Lab

8th Semester		
S No.	**Subject Code**	**Subject Name**
1	KHU801	Rural Planning and Industrial Development
2	KOE081	Cloud Computing
3	KOE097	Big Data
4	KIT851	Project

13 KM STONE, GHAZIABAD-MEERUT ROAD, GHAZIABAD – 201206
Website: www.kiet.edu

CO PO and Mapping of CO PO 2nd Year

(2020-2024 BATCH)

Session: - 2021-22 Semester:- 4th

S. No.	Subject	Code
1	Sensor & Instrumentation	KOE044
2	Technical Communication	KAS401
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

			Bloom's Taxonomy| Knowledge Dimension
		At the end of course, students will be able to:	
Sensor & Instrumentation (KOE044)	CO1	Apply the use of sensors for measurement of displacement, force and pressure	3/|F
	CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	4/C
	CO3	Demonstrate the use of virtual instrumentation in automation industries	2/C
	CO4	Identify and use data acquisition methods	3/P
	CO5	Comprehend intelligent instrumentation in industrial automation	2/M

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

-

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Technical Communication (KAS 401)	CO1	Analyze the nature and objectives of Technical Communication relevant for workplace as Engineer.	K4/F,C
	CO2	Utilizing the Technical Writing Skills for the purpose of Technical Communication and its exposure in various dimensions.	K3/C,P
	CO3	Imbibe presentation strategies inputs with confidence in facing diverse audience in required situations at workplace.	K3/C,P, M
	CO4	Estimate the application of Technical Communication to promote their competence for various media like report generation, resume design, GD, and Interview etc.	K5/M
	CO5	Evaluate Voice dynamics and select appropriate cues for their own efficacy as fluent and efficient communicators.	K5/C,P

CO \ PO Mapping	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2
CO1	-	-	-	-	-	-	-	-	2	3	-	3	-	-
CO2	-	-	-	-	-	-	-	-	2	3	-	3	-	
CO3	-	-	-	-	-	-	-	-	2	3	-	3	-	-
CO4	-	-	-	-	-	-	-	-	2	3	-	3	-	-
CO5	-	-	-	-	-	-	-	-	2	3	-	3	-	-

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Theory of Automata & Formal Language (KCS402)	CO1	Acquire a full understanding and applicability of Automata Theory as the basis of all computer science languages design.	K1,K2 |C,P
	CO2	Identify different formal languages and design the recognizer for regular languages to establish their applicability in real life.	K3 |C,P
	CO3	Analyze & Design grammars for different formal languages.	K4|C,P
	CO4	Understand the designing of Pushdown Automata and Turing machines.	K4,K5|C, P
	CO5	Determine the decidability and intractability of computational problems.	K5,K6|C, P

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO 1**	**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

At the end of course, students will be able to:			Bloom's Taxonomy| Knowledge Dimension
Operating System (KCS 401)	CO1	Understand the structure, functions and types of OS.	K2 | F, C
	CO2	Illustrate the principles of concurrency, Deadlocks and synchronization problem in process.	K3 | C, P
	CO3	Explore about Processes, Threads, and various CPU scheduling algorithms.	K4 | C, P
	CO4	Compare various memory management schemes.	K5 | C, P
	CO5	Illustrate various I/O management and File Systems.	K3 | C, P

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

		At the end of course, students will be able to:	Bloom's Taxonomy| Knowledge Dimension
Mircroprocessr (KCS403)	CO1	Recall and apply basic concept of digital computer to Microprocessor based systems.	K3,K4| C,P
	CO2	Identify detailed s/w & h/w structure of 8085/8086 Microprocessor.	K2,K4| C,F
	CO3	Examine and solve hardware and software problems after studying instruction set of 8085/8086 programming techniques.	K3| C,P
	CO4	Analyze software problems after studying instruction set of 8085 and programming techniques.	K4| C,P
	CO5	Illustrate techniques, skills and hardware tools necessary for computer engineering practice after studying 8237 DMA, 8255 PPI,8254 programmable interval timer and 8259A programmable interrupt controller.	K5| C,P

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

		At the end of course, students will be able to:	Bloom's Taxonomy| Knowledge Dimension
Python Programming (KNC-402)	CO1	Understand and write simple Python programs	K2| C
	CO2	Develop Python programs with conditionals and loops.	K5| C,P
	CO3	Design python functions and to use Python data structures –- lists, tuples, dictionaries	K4| P
	CO4	Perform input/output with files in Python and to apply OOPs concepts in python	K5| C,P
	CO5	Apply searching, sorting and merging in Python	K3| C

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO 1**	**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

At the end of course, students will be able to:			Bloom's Taxonomy| Knowledge Dimension
Operating System Lab (KCS 451)	CO1	Apply knowledge of basic UNIX System calls to solve various software problems.	K3| C,P
	CO2	Examine various process synchronization problems and memory management techniques.	K4| C,P,M
	CO3	Compare the performance of various CPU scheduling algorithms and page replacement algorithms.	K5| C,P,M

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

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Microprocessor Lab (KCS452)	CO1	Model basic arithmetic operations assembly language programs on 8085 microprocessor.	K3 | C, P
	CO2	Build advanced arithmetic operations assembly language programs on 8085 microprocessors.	K3 | C, P
	CO3	Model basic arithmetic operations assembly language programs on 8086 microprocessor.	K4 | C, P
	CO4	Build advanced arithmetic operations assembly language programs on 8086 microprocessor.	K5 | C, M
	CO5	Design interfacing circuits with microprocessors.	K3 | C, P

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

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Python Programming Lab (KCS-453)	CO1	Understand basic syntax of python implementation	K2| C
	CO2	Practically apply looping and conditional constructs	K3|C,P
	CO3	Develop programs related with list data structure.	K5| C,P
	CO4	Design programs related to tuples, dictionary and set	K4| C
	CO5	Apply searching, sorting and merging in Python	K3| C,P

CO \ PO Mapping	**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

(2019-2023 BATCH)

Session:- 2021-22 Semester:- 6th

S. No.	Subject	Code
1	Software Engineering	KCS601
2	Data Analytics	KIT601
3	Computer Networks	KCS603
4	Blockchain Architecture Design	KIT061
5	Software Project Management	KOE068
6	Indian Tradition, Culture and Society	KNC602
7	SE Lab	KCS651
8	Data Analytics Lab	KIT651
9	Computer Networks Lab	KCS653

Theory

		At the end of course, students will be able to:	Bloom's Taxonomy| Knowledge Dimension
Software Engineering (KCS601)	CO1	Explain various software characteristics and analyze different software Development Models	K3| F,C
	CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards	K3 |F,C
	CO3	Compare and contrast various methods for software design.	K4| C,P
	CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing	K3|P
	CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis.	K6|C,P,M

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

At the end of course, students will be able to:			Bloom's Taxonomy| Knowledge Dimension
Data Analytics (KIT601)	CO1	Discuss various concepts of the data analytics pipeline .	K2/ C, P
	CO2	Apply classification and regression techniques	K3/P
	CO3	Explain and apply mining techniques on streaming data	K2,/C,P
	CO4	Compare different clustering and frequent pattern mining algorithms	K4/P
	CO5	Describe the concept of R programming and implement analytics on Big data using R.	K3/P

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO 11**	**PO 12**	**PS O1**	**PSO2**
CO1	2	2	-	-	-	-	-	–	-	-	-	-	2	2
CO2	3	3	2	3	2	-	-	-	–	-	-	-	3	2
CO3	3	2	2	2	1	-	-	-	–	-	-	-	3	2
CO4	3	3	3	3	3	-	-	-	-	–	-	-	3	2
CO5	3	3	3	3	3	-	-	-	-	-	-	-	3	2

At the end of course, students will be able to:			Bloom's Taxonomy| Knowledge Dimension
Computer Networks (KCS 603)	CO1	Understand how the data is transmitted from point-to-point and the structure of networks.	K1,K2/C,P
	CO2	Analysis of different medium access control protocols and summarize data link layer protocols.	K3/C,P
	CO3	Understand the concept of routing and IP addressing in the network layer.	K2,K3/C,P
	CO4	Study of transport layer, session layer and presentation layer of OSI model and its functionalities.	K2,K3/C,P
	CO5	Understand the role of protocols and emailing service and application layer services.	K2,K3/C,P

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

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Blockchain Architecture Design (KIT061)	CO1	Describe the basic understanding of Blockchain architecture along with its primitive.	K2,K3/F,C
	CO2	Explain the requirements for basic protocol along with scalability aspects.	K2,K3/C,P
	CO3	Design and deploy the consensus process using frontend and backend.	K3,K4/C,P
	CO4	Apply Blockchain techniques for different use cases like Finance and Trade/Supply.	K2,K3/C,P
	CO5	Apply Blockchain techniques for different use cases of Government activities.	K3,K6/C,P, M

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

At the end of course, students will be able to:			Bloom's Taxonomy| Knowledge Dimension
Software Project Management (KOE068)	CO1	Understand the basic concepts of software project management and perform the feasibility study of a software project	K2, K3/C,P
	CO2	Understand the agile software development methods and estimate the effort and budget required to carry out a project	K2, K3/C,P
	CO3	Understand the concepts of project scheduling and risk analysis to compute time required for project completion	K2, K3/C,P
	CO4	Understand the concepts of project monitoring and controlling a project execution and change management	K2, K3/C,P
	CO5	Understand the concepts of people management	K2 /C

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

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Indian Tradition, Culture and Society (KNC602)	CO1	Identify and understand the roots and details of Society State and Polity in India.	K1,K2/F,C
	CO2	Understand the importance of Indian Literature, Culture, Tradition, Practices and to apply in the present system.	K2, K3/ F,M
	CO3	Analyze the Indian Religion, Philosophy, Practices and in shadow of Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy and to apply in present system	K3,K4/C,M
	CO4	Analyze the Science, Management and Indian Knowledge System and to apply in the present system.	K3, K4/ F,P,M
	CO5	Evaluate the Indian Architect, Engineering and Architecture in Ancient India, India's Cultural Contribution to the World and to create an environment in Arts and Cultural for the present system.	K5,K6/ F,P,M

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

Practical

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Computer Networks Lab (KCS653)	CO1	Understand the fundamental concepts of computer networking and Network topologies.	K1,K2/F,C
	CO2	Know about different types of network devices and design, implement, and analyze simple computer networks	K3, K4/C,P
	CO3	Learn the basic network commands and use techniques, skills, and modern networking tools necessary for engineering practice.	K3,K4, K5/F,C,P
	CO4	Formulate problems and their solutions, think creatively and communicate effectively.	K4, K5, K6/C,P,M
	CO5	Describe how rapid progress of computer network technology can impact on the society and continue to advance personal knowledge and understanding.	K3, K4/M

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

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Software Engineering Lab (KCS651)	CO1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement	K4|F,C,P
	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	K5|C,P
	CO3	Draw a class diagram after identifying classes and association among them	K5|C,P
	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	K5|C,P
	CO5	Able to use modern engineering tools for specification, design, implementation and testing	K4|C,P

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

	At the end of course, students will be able to:		Bloom's Taxonomy| Knowledge Dimension
Data Analytics Lab (KIT651)	CO1	Implement numerical and statistical analysis on various data sources	K3/P
	CO2	Apply data preprocessing and dimensionality reduction methods on raw data	K3/P
	CO3	Implement linear regression technique on numeric data for prediction	K3/P
	CO4	Execute clustering and association rule mining algorithms on different datasets	K3/P
	CO5	Implement and evaluate the performance of KNN algorithm on different datasets	K4/P

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

CO PO and Mapping of CO PO 4th Year

(2018-2022 BATCH)

Session:- 2021-22 Semester:- 8th

S. No.	Subject	Code
1	Rural Development	KHU801
2	Quality Management	KOE085
3	Big Data	KOE097
4	Project	KIT851

Theory

Rural Planning and Industrial Development (KHU-801)		**At the end of course, students will be able to:**	**Bloom's Taxonomy| Knowledge Dimension**
	CO1	Understand the definitions, concepts and components of Rural Development	K2
	CO2	Distinguish among importance, structure, significance and resources of Indian rural economy	K3
	CO3	Apply learning of area development programs and see their impact.	K5
	CO4	Apply knowledge of rural entrepreneurship	K4
	CO5	Evaluate different methods for human resource planning	K3

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

Quality Management (KOE-085)		**At the end of course, students will be able to:**	**Bloom's Taxonomy| Knowledge Dimension**
	CO1	Describe the concepts of a quality management system in order to managing a product quality.	K2/C
	CO2	Describe the effective organizational structure and the methods of managing the economic and the human aspects in controlling the quality of a product.	K2/C
	CO3	Demonstrate the application of Statistical Quality Control techniques in managing a product quality proactively.	K2, K3/C, P
	CO4	Describe the various techniques for the evaluation and the improvement of reliability and maintainability as well as the motivational techniques (zero defects, quality circles) for the adaptability of a new quality control system.	K2/C, P
	CO5	Describe the ISO 9000 Series, Taguchi method and JIT in improving a product quality.	K2/C, P

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

Big Data (KOE-097)		At the end of course, students will be able to:	Bloom's Taxonomy| Knowledge Dimension
	CO1	Discuss the fundamental concepts of Big Data & its challenges.	K2/C
	CO2	Explain non-relational (NoSQL) database concepts and its Distribution models	K2/C
	CO3	Understand Hadoop Ecosystem and discuss Hadoop Distributed File System (HDFS)	K2/C, P
	CO4	Discuss Hadoop MapReduce framework, the working of MapReduce on data stored in HDFS and YARN concepts	K2, K3/C, P
	CO5	Apply No-SQL databases concepts with architecture like HIVE, Pig and their queries.	K4

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

Practical

Project (KIT851)		**At the end of course, students will be able to:**	**Bloom's Taxonomy| Knowledge Dimension**
	CO1	Select and summarize all aspects of the real-life problem through survey.	K1, K2 | C
	CO2	Apply acquired knowledge to develop working model and plan different phases for its execution.	K3 | C, P
	CO3	Analyze outcome of each phase using various tools, techniques, and coding practices.	K4 | C, P
	CO4	Justify/defend opinions, validity of ideas or quality of work based on a set of criteria.	K5 | C, P
	CO5	Test the working model and modify related phase accordingly. Finally integrate all phases	K6 | C, P

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