



**KIET GROUP OF INSTITUTIONS, GHAZIABAD**

**Department of Information Technology**

# **Course Outcomes and CO-PO, PSO Mapping**



**Session 2022-23**

**Department of Information  
Technology**

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

**Website: [www.kiet.edu](http://www.kiet.edu)**

# KIET GROUP OF INSTITUTIONS, GHAZIABAD

## Department of Information Technology

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8	KIT451	Web Designing Lab
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# CO PO and Mapping of CO PO 2nd Year

(2021-2025 BATCH)

Session:- 2022-23 Semester:- 4th

S.No.	Subject	Code
1	Maths-IV	KAS402
2	Technical Communication	KAS401
3	Theory of Automata & Formal Language	KCS402
4	Operating System	KCS401
5	Web Designing	KIT401
6	Python Programming	KNC402
7	Operating Systems Lab	KCS451
8	Web Designing Lab	KIT451
9	Python Programming Lab	KCS453

## Theory

<b>Maths-IV (KAS402)</b>	<b>At the end of course, students will be able to</b>														<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Study the methods to solve Partial Differential Equations														3	C,P
	CO2	Apply the concept of separation of variables to solve wave , heat , Laplace and transmission equations.														3	C,P
	CO3	Evaluate Moments, M.G.F, Correlations, linear regression.														5	C,P
	CO4	Apply the concept of probability to solve discrete and continuous probability distributions.														3	C,P
	CO5	Apply the concept of sampling to study t-test, F-test and Chi-square test, One way Analysis of Variance (ANOVA).														3	C,P
<b>CO \ PO Mapping</b>		<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1		3	3	2	3	2	3	2	-	-	-	-	-	-	-		
CO2		3	3	3	3	2	3	1	-	-	-	1	3	-	-		
CO3		3	3	3	2	3	3	1	-	-	-	1	3	-	-		
CO4		3	3	3	2	3	3	2	-	-	-	2	3	-	-		
CO5		3	3	3	3	3	1	2	-	-	-	1	3	-	-		

<b>Technical Communication (KAS401)</b>	<b>At the end of course, students will be able to</b>														<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Analyze the nature and objectives of Technical Communication relevant for workplace as Engineer.														4	C,P
	CO2	Utilizing the Technical Writing Skills for the purpose of Technical Communication and its exposure in various dimensions.														3	C,P
	CO3	Imbibe presentation strategies inputs with confidence in facing diverse audience in required situations at workplace.														4	C,P
	CO4	Estimate the application of Technical Communication to promote their competence for various media like report generation, resume design, GD, and Interview etc.														3	C,P
	CO5	Evaluate Voice dynamics and select appropriate cues for their own efficacy as fluent and efficient communicators.														5	C,P
<b>CO \ PO Mapping</b>		<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1		-	-	-	-	-	-	-	-	2	3	-	3	-	-		
CO2		-	-	-	-	-	-	-	-	2	3	-	3	-	-		
CO3		-	-	-	-	-	-	-	-	2	3	-	3	-	-		
CO4		-	-	-	-	-	-	-	-	2	3	-	3	-	-		
CO5		-	-	-	-	-	-	-	-	2	3	-	3	-	-		

Theory of Automata & Formal Language (KCS402)	At the end of course, students will be able to													Knowledge Level	Knowledge Category	
	CO1	Understand the concept of Automata, Formal Languages and their applications.													2	F, C
	CO2	Analyse and construct the regular expressions and recogniser for regular languages.													4	F, C, P
	CO3	Illustrate grammars for different formal languages.													4	F, C, P
	CO4	Analyse and construct Pushdown Automata.													4	F, C, P
	CO5	Design Turing Machines and explore the concept of decidability and intractability of computational problems.													6	F, C, P
CO \ PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2		
CO1	2	1	-	-	-	-	-	-	-	-	-	1	-	-		
CO2	3	2	2	-	-	-	-	-	-	-	-	1	1	1		
CO3	3	2	2	-	-	-	-	-	-	-	-	1	1	1		
CO4	3	2	2	-	-	-	-	-	-	-	-	1	1	1		
CO5	3	3	2	-	-	-	-	-	-	-	-	1	1	1		

Operating System (KCS401)	At the end of course, students will be able to													Knowledge Level	Knowledge Category	
	CO1	Understand the need, evolution and design issues of various categories of operating systems.													2	F, C
	CO2	Apply different CPU scheduling algorithms and deadlock handling methods.													3	C, P
	CO3	Analyze various concurrency issues and different synchronization mechanisms in concurrent execution environment.													4	C, P
	CO4	Analyze various memory management techniques for efficient memory allocation.													4	C, P
	CO5	Apply different techniques of I/O management, Disk management, Disk scheduling and file system structure in operating systems.													3	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	-	-	-	-	-	2	1	1		
CO2	3	3	3	3	3	1	-	-	-	-	-	2	2	1		
CO3	3	3	2	3	2	2	-	-	-	-	-	2	2	1		
CO4	3	3	2	3	2	2	-	-	-	-	-	2	2	1		
CO5	3	2	2	2	2	2	-	-	-	-	-	2	2	2		

Web Designing (KIT401)	At the end of course, students will be able to													Knowledge Level	Knowledge Category	
	CO1	Understand the principle of web page design and about types of websites.													2	F,C
	CO2	Apply the basic concept of html in web page designing.													3	C,P
	CO3	Analyze the elements of Cascading Style Sheet (CSS) in formatting of web pages.													4	C,P
	CO4	Apply the basic concept of java script and its application in designing a web page.													3	C,P
	CO5	Understand the basics concept of Web Hosting and Search Engine Optimization.													2	F,C
CO \ PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2		
CO1	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO2	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO3	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO4	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO5	3	3	3	3	2	1	1	1	1	1	1	2	3	3		

Python Programming (KNC-402)	At the end of course, students will be able to													Knowledge Level	Knowledge Category	
	CO1	Understand and write simple Python programs													2	C, P
	CO2	Illustrate Python programs with conditionals and loops.													4	C, P
	CO3	Apply python functions along with Python data structures — lists, tuples, dictionaries													3	C, P
	CO4	Apply input/output with files and Illustrate OOPs concepts in python													3	C, P
	CO5	Implement concepts of searching, sorting and merging using Python Programming.													3	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		

## Practical

<b>Operating System Lab (KCS 451)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Analyze various modern general-purpose operating systems.													4	F, C
	CO2	Implement CPU scheduling algorithms for process scheduling.													3	C, P
	CO3	Construct the solution of process synchronization problem using semaphores.													3	C, P
	CO4	Analyze various memory management techniques.													4	C, P
	CO5	Implementation of disk scheduling techniques.													3	C, P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	3	3	3	3	3	2	-	-	-	1	-	3	1	1		
CO2	3	3	2	3	2	2	-	-	-	-	-	2	2	1		
CO3	3	3	3	3	3	1	-	-	-	-	-	2	2	2		
CO4	3	3	2	3	2	3	-	-	-	-	-	2	2	2		
CO5	3	2	2	2	2	3	-	-	-	-	-	2	2	3		

<b>Web Designing Lab (KIT451)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Apply HTML basic concept in designing of Web Page.													3	C,P
	CO2	Apply various HTML tags and attributes in designing of the web pages.													3	C,P
	CO3	Analyze CSS for implementing Web pages.													4	C,P
	CO4	Apply Java Script to build interactive web pages.													3	C,P
	CO5	Analyze and develop different types of web pages using HTML, CSS and JavaScript.													4	C,P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO2	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO3	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO4	3	3	3	3	2	1	1	1	1	1	1	2	3	3		
CO5	3	3	3	3	2	1	1	1	1	1	1	2	3	3		

Python Programming Lab (KCS-453)	At the end of course, students will be able to													Knowledge Level	Knowledge Category	
	CO1	Understand and write simple Python programs.													2	C, P
	CO2	Illustrate Python programs with conditionals and loops.													4	C, P
	CO3	Apply python functions along with Python data structures -- lists, tuples, dictionaries.													3	C, P
	CO4	Apply input/output with files and Illustrate OOPs concepts in python.													3	C, P
	CO5	Implement concepts of searching, sorting and merging using Python Programming.													3	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

(2020-2024 BATCH)

Session:- 2022-23 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	Indian Tradition, Culture and Society	KNC602
7	SE Lab	KCS651
8	Data Analytics Lab	KIT651
9	Computer Networks Lab	KCS653

## Theory

<b>Software Engineering (KCS601)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Explain various software characteristics and analyze different software Development Models													2	C,M
	CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards.													2	F,C
	CO3	Compare and contrast various methods for software design.													3	M
	CO4	Formulate testing strategy for software systems using methods like functional testing, test driven development, and unit testing.													3	F,P
	CO5	Utilize and manage various software management tools for development, maintenance, and analysis while managing the software development process both individually and in teams.													5	C,M
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	2	1	1	-	1	1	1	-	-	1	1	1	1	1		
CO2	2	3	3	2	2	1	-	-	-	2	2	1	2	2		
CO3	3	3	3	2	1	1	1	-	-	2	1	1	1	1		
CO4	3	3	3	2	1	-	-	-	-	2	1	1	2	2		
CO5	3	3	2	2	2	1	1	1	3	3	3	1	2	2		

<b>Data Analytics (KIT601)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Discuss various concepts of data analytics pipeline													2	C
	CO2	Apply classification and regression techniques													3	C,P
	CO3	Explain and apply mining techniques on streaming data													3	C,P
	CO4	Compare different clustering and frequent pattern mining algorithms													4	M
	CO5	Describe the concept of Python programming and implement analytics on Big data using python													3	C,P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
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		

<b>Computer Networks (KCS 603)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Understand the fundamental concepts of computer networking and its layered design architecture.													2	F,C
	CO2	Apply the link layer properties to detect error and to find the solutions for error control and flow control.													3	C,P
	CO3	Design the subnet addresses to form the LAN and calculate distance among routers in subnet.													5	C,P
	CO4	Understand the duties of transport layer, session layer and presentation layer and also focus on network security and secure communication channel.													2	F,C
	CO5	Understand the features and operations of various application layer protocols.													2	F,C
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	3	3	1	1	3	-	-	-	1	2	1	3	1	1		
CO2	3	3	1	1	3	-	-	-	1	2	1	3	2	2		
CO3	3	3	2	3	3	-	-	-	1	2	2	3	2	3		
CO4	3	2	2	3	3	1	-	1	1	2	2	3	3	3		
CO5	3	2	1	1	3	1	-	1	1	2	1	3	2	3		

<b>Blockchain (KIT061)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Understand the basics of Blockchain technology along with its primitives.													2	F
	CO2	Understand the requirements of basic consensus protocol along with scalability aspects													2	F,C
	CO3	Apply the smart contracts to solve the problems of existing system using solidity and hyper-ledger fabric tool													3	C,P
	CO4	Analyze the Blockchain techniques for use cases like Finance and Trade/Supply													4	C,P
	CO5	Analyze the Blockchain techniques for use cases of Government activities													4	C,P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	2	2	3	1	1	-	-	-	1	1	1	3	2	1		
CO2	2	1	3	1	2	-	-	-	1	1	1	3	2	1		
CO3	2	3	3	2	3	-	-	-	2	1	1	3	2	1		
CO4	1	3	2	3	3	2	2	2	2	2	2	3	2	2		
CO5	1	3	2	3	3	2	2	2	2	2	2	3	2	2		

<b>Real Time Systems (KOE-061)</b>	<b>At the end of course, students will be able to</b>												<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Describe concepts of Real-Time systems and modeling.												2	F,C
	CO2	Recognize, and apply the characteristics of a real-time system in context with real time scheduling.												3	C,P
	CO3	Classify and analyze various resource sharing mechanisms and their related protocols.												4	C,M
	CO4	Interpret the basics of real time communication by the knowledge of real time models and protocols.												5	F,C
	CO5	Apply the basics of RTOS in interpretation of real time systems.												5	C,P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	
CO1	3	3	2	2	2	2	-	-	2	2	2	3	-	3	
CO2	3	3	3	3	3	3	-	-	2	2	1	3	-	3	
CO3	3	3	3	3	3	3	2	-	2	2	2	3	-	3	
CO4	3	3	3	3	3	3	2	2	2	2	1	3	-	3	
CO5	3	3	3	3	3	3	2	2	2	2	1	3	-	3	

<b>Indian Tradition, Culture and Society (KNC602)</b>	<b>At the end of course, students will be able to</b>												<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Examine and associate the ancient roots and details of State & Societal formation with the understanding of Polity in India.												3	C
	CO2	Examine the important knowledge of Indian Literature, Culture, Tradition, Practices to present Indian System.												3	C
	CO3	Correlate the Indian Religion, Philosophy, Practices and shadow of Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy in present system.												4	C
	CO4	Explore the Indian Knowledge System, Science & Management in modern perspectives.												4	P
	CO5	Examine the Indian Architect, Engineering and Architecture in Ancient India, Indian's Cultural Contribution to the World and to explore an environment in Arts and Cultural for the present system.												4	P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	
CO1	-	-	-	1	-	2	-	1	1	-	-	1	-	-	
CO2	-	-	-	1	-	2	-	1	1	-	-	1	-	-	
CO3	-	-	-	1	-	2	-	-	1	-	-	1	-	-	
CO4	-	-	-	1	-	2	2	-	-	-	2	1	-	-	
CO5	-	-	-	1	-	2	2	1	-	-	-	1	-	-	

## Practical

		At the end of course, students will be able to												Knowledge Level	Knowledge Category
<b>Computer Networks Lab (KCS 653)</b>	CO1	Understand the fundamental concepts of computer networking, network topologies and network connecting devices.												2	F,C
	CO2	Learn about UTP cabling and design simple computer network LAN.												4	F,C,P
	CO3	Learn the basic network commands and use techniques, skills, and modern networking tools necessary for engineering practice.												5	C,P
	CO4	Validate the working of Wireshark sniffer to tap the wire and CISCO packet tracer to analyze the simulated network.												5	F,C,P
	CO5	Analyze the working and performance of various protocols to describe the rapid progress of computer network technology.												4	F,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	1	-	-	2	1	2	2	-	2
CO2		3	2	2	2	2	1	-	1	2	2	2	3	2	3
CO3		3	2	2	2	3	1	-	2	2	2	2	3	2	3
CO4		3	2	2	2	3	2	-	3	3	3	3	3	2	3
CO5		3	3	2	2	3	1	-	2	3	2	2	2	2	3

<b>Software Engineering Lab (KCS651)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement													4	C
	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													5	C, P
	CO3	Draw a class diagram after identifying classes and association among them													5	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													5	C, P
	CO5	Able to use modern engineering tools for specification, design, implementation and testing													4	C, M
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	3	3	3	2	3	2	2	-	1	-	1	3	1	1		
CO2	3	3	3	3	3	2	2	-	1	-	1	3	1	1		
CO3	3	3	3	3	3	2	2	-	1	-	1	2	1	1		
CO4	3	3	3	3	3	2	2	-	1	-	1	1	2	2		
CO5	3	3	3	3	3	2	2	-	1	-	1	2	3	3		

<b>Data Analytics Lab (KCS 651)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Implement numerical and statistical analysis on various data sources.													4	F,P
	CO2	Apply data preprocessing and dimensionality reduction methods on raw data.													5	C,P
	CO3	Implement linear regression technique on numeric data for prediction.													4	C,P
	CO4	Execute clustering and association rule mining algorithms on different datasets													5	P
	CO5	Implement and evaluate the performance of KNN algorithms on different datasets.													4	P,M
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
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		

# CO PO and Mapping of CO PO 4th Year

(2019-2023 BATCH)

Session:- 2022-23 Semester:- 8th

S.No.	Subject	Code
1	Rural Development	KHU801
2	Cloud Computing	KOE081
3	BigData	KOE097
4	Project	KIT851

## Theory

<b>Rural Development (KHU 801)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Understand the definitions, concepts and components of Rural Development													2	C
	CO2	Distinguish among importance, structure, significance and resources of Indian rural economy													4	C, P
	CO3	Apply learning of area development programs and see their impact.													3	C, P
	CO4	Apply knowledge of rural entrepreneurship.													3	C, P
	CO5	Evaluate different methods for human resource planning.													5	C, P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	-	-	-	-	-	2	2	3	2	1	2	1	3	1		
CO2	-	-	-	-	-	2	2	3	2	1	2	1	3	1		
CO3	-	-	-	-	-	2	2	3	3	1	2	1	3	1		
CO4	-	-	-	-	-	2	2	3	3	1	2	1	3	1		
CO5	-	-	-	-	-	2	2	3	3	1	3	1	3	1		

<b>Cloud Computing (KOE-081)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Describe architecture and underlying principles of cloud computing.													2	C, P
	CO2	Create the Services Oriented Architecture and various types of cloud services.													6	C,P
	CO3	Analyze Inter cloud resources management cloud storage services and their providers Assess security services and standards for cloud computing.													4	C,P
	CO4	Explain and apply need, types and tools of Virtualization for cloud.													3	C,P
	CO5	Analyze security, standards and applications of cloud technologies.													4	C,P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	3	2	-	-	2	-	-	1	1	-	-	2	1	2		
CO2	3	2	3	2	3	-	-	1	1	3	2	2	3	1		
CO3	3	3	2	3	2	-	-	1	-	1	3	2	3	1		
CO4	2	2	-	-	2	-	-	-	-	-	-	2	3	1		
CO5	2	3	2	3	3	-	-	-	1	-	-	2	3	1		



<b>Big Data (KOE-097)</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Understand the Big Data concept and related terminologies like security, characteristics, analytics, tools & techniques.													2	C
	CO2	Understand Hadoop Ecosystem and apply MapReduce programming on Hadoop framework.													3	C,P
	CO3	Analyze Hadoop setup with JAVA interfaces.													4	C,P
	CO4	Apply resource management, NoSQL database and OOP programming on Hadoop Ecosystem using YARN, MongoDB, Spark and SCALA.													3	C,P,M
	CO5	Analyze the data processing and monitoring using Pig, Hive and HBase on Hadoop Ecosystem.													4	C,P,M
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
CO1	3	3	3	3	3	1		1	2		2	3	3	1		
CO2	3	3	3	3	3	1		1	2		2	3	3	1		
CO3	3	3	3	3	3	1		1	2		2	3	3	1		
CO4	3	3	3	3	3	1		1	2		2	3	3	1		
CO5	3	3	3	3	3	1		1	2		2	3	3	1		

## Practical

<b>Project KIT-851</b>	<b>At the end of course, students will be able to</b>													<b>Knowledge Level</b>	<b>Knowledge Category</b>	
	CO1	Select and summarize all aspects of the real life problem through survey.													2	C
	CO2	Apply acquired knowledge to develop working model and plan different phases for its execution.													3	C,P
	CO3	Analyze outcome of each phase using various tools, techniques, and coding practices.													4	C,P
	CO4	Justify/defend opinions, validity of ideas or quality of work based on a set of criteria.													5	C,P
	CO5	Test the working model and modify related phase accordingly. Finally integrate all phases													6	C,P
<b>CO \ PO Mapping</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>		
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		