Course Outcomes and CO-PO,PSO Mapping

Session 2023-24

Department of Information Technology

KIET GROUP OF INSTITUTIONS, GHAZIABAD
Department of Information Technology

Index

3rd Semester		
S No.	**Subject Code**	**Subject Name**
1	BOE305	Sensor & Instrumentation
2	BVE 301	Universal Human Values
3	BCS 301	Data Structure
4	BCS 302	Computer Organization and Architecture
5	BCS 303	Discrete Structure & Theory of Logic
6	BCC 302	Python Programming
7	BCS 353	WD Workshop
8	BCS 351	Data Structure Using C Lab
9	BCS 352	Computer Organization and Architecture Lab
10	BCC 351	Mini Project & Internship

5th Semester		
S No.	**Subject Code**	**Subject Name**
1	KCS 055	Machine Learning Techniques
2	KCS 501	Database Management System
3	KCS 503	Design and Analysis of Algorithm
4	KIT 501	Web Technology
5	KCS 054	Object Oriented System Design
6	KNC 501	Constitution of India, Law and Engineering
7	KCS 551	Database Management System Lab
8	KCS 553	Design and Analysis of Algorithm Lab
9	KIT 551	Web Technology Lab
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S No.	**Subject Code**	**Subject Name**
1	KCS 078	Deep Learning
2	KCS 071	Artificial Intelligence
3	KHU 701	Rural Development: Administration and Planning
4	KOE 074	Renewable Energy Resources
5	KIT 751	Artificial Intelligence Lab
6	KIT 752	Mini Project + Internship
7	KIT 753	Project

CO PO and Mapping of CO PO 2nd Year

(2022-2026 BATCH)

Session:- 2023-24   Semester:- 3rd

S.No.	Subject	Code
1	Sensor & Instrumentation	BOE305
2	Universal Human Values	BVE 301
3	Data Structure	BCS 301
4	Computer Organization and Architecture	BCS 302
5	Discrete Structure & Theory of Logic	BCS 303
6	Python Programming	BCC 302
7	WD Workshop	BCS 353
8	Data Structure Using C Lab	BCS 351
9	Computer Organization and Architecture Lab	BCS 352
10	Mini Project & Internship	BCC 351

Theory

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

CO \ PO Mapping	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

Universal Human Values		At the end of course, students will be able to	Knowledge Level	Knowledge Category
	CO1	Understand the essential complementarily between 'VALUES" and 'SKILLS'.	2	F, P
	CO2	Understand how to ensure sustained happiness and prosperity.	5	C
	CO3	Apply understanding of values and human reality to develop a holistic perspective towards life, and profession.	4,5	P,C
	CO4	Analyze harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	2,6	F,C
	CO5	Analyze ethical and unethical practices to actualize a harmonious environment wherever they work.	6	C

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Data Structure	CO1	Understand the concept of algorithm complexity andfundamental data structures.	Understand	Conceptual, Procedural
	CO2	Apply the knowledge of fundamentals data structures toimplement linear data structures.	Apply	Conceptual, Procedural
	CO3	Practice standard algorithms for searching and sorting	Apply	Conceptual, Procedural
	CO4	Apply the concept of recursion to implement non-lineardata structure and operations.	Apply	Conceptual, Procedural
	CO5	Analyze various graph algorithms to solve real-worldproblems.	Analyze	Conceptual, Procedural, Metacognitive

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Computer Organization and Architecture	CO1	**Describe** the basic organization and operation of the components of a digital computer system.	3	C, P
	CO2	**Illustrate** various arithmetic and logical operations on different types of numbers to design an arithmetic and logic unit.	4	C, P
	CO3	Analyze the performance issues of the processor and classify the control unit implementation techniques.	4	C, P
	CO4	**Categorize** the hierarchical memory system and examine the virtual memory implementation techniques.	4	C, P
	CO5	**Compare** the different I/O data transfer techniques, and describe the different ways of communication among I/O devices and standard I/O interfaces	4	C, P

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Discrete Structure & Theory of Logic	CO1	**Acquire** Knowledge of sets and relations for solving the problems of POSET and lattices.	3	C, P
	CO2	**Apply** fundamental concepts of functions and Boolean algebra for solving the problems of logical abilities.	3	C, P
	CO3	**Employ** the rules of propositions and predicate logic to solve the complex and logical problems.	3	F, C, P
	CO4	**Explore** the concepts of group theory and their applications for solving the advance technological problems.	4	F, C,
	CO5	**Illustrate** the principles and concepts of graph theory for solving problems related to computer science.	4	F,C, P

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Python Programming	CO1	**Interpret** the fundamentals of Python syntax and semantics	2	C
	CO2	**Express** proficiency in the handling of strings and functions	2	C, P
	CO3	**Discover** the methods to utilize the data structures like lists, dictionaries, tuples and sets.	3	C, P
	CO4	**Acquire** the knowledge of file handling operations and adherence to coding standards.	3	C, P
	CO5	**Develop** Python-based projects by inculcating creativity and originality in problem-solving	6	P, M

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

Practical

Wed Designing Workshop Lab		At the end of course, students will be able to												Knowledge Level	Knowledge Category
	CO1	To understand the concept of layout and structure of html													
	CO2	To apply the integration of CSS in html pages to format and make Webpages attractive.													
	CO3	Apply the JS concept to process and validate the data of web page on client Machine.													
	CO4	Design the website by interlinking a number of webpages with the application of html CSS and JavaScript.													

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

Data Structure Using C Lab		At the end of course, students will be able to												Knowledge Level	Knowledge Category
	CO1	Practice various Sorting and Searching Algorithms.												3	C,P
	CO2	Analyze the recursive implementation of different sortingand searching algorithms.												4	C,P
	CO3	Exercise various data Structure operations using static anddynamic memory allocation.												3	C,P
	CO4	Demonstrate various operations like traversal, insertion,deletion on tree data structure.												3	C,P
	CO5	Illustrate and Implement practical applications based ongraphs and shortest paths.												3	C,P,M

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

		At the end of course, students will be able to													Knowledge Level	Knowledge Category
Computer Organization and Architecture Lab	CO1	**Examine** the output of the basic logic gates for different combinations of inputs.													3	P
	CO2	**Simulate** the combinational circuits for binary arithmetic (such as adders, subtractors, and multiplier) and code converter.													3	P
	CO3	**Simulate** combinational circuits for encoders/decoders and selection devices multiplexers/demultiplexers using logic gates.													3	P
	CO4	**Simulate** the basic building block of the sequential circuits (i.e., SR and D Flip Flops) using logic gates.													3	P
	CO5	**Simulate** the 2-bit Arithmetic Logic Unit using logic gates.													3	P

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Mini Project & Internship	CO1	Explore the real life problems and their implementation through Tools &Techniques.	3	C,P
	CO2	Expose the creative design process through the integration and application of diverse technical knowledge.	3	C,P
	CO3	Analyze the possible solutions to meet the requirements of the problem solving.	4	C,P
	CO4	Build a solution by employing a variety of tools and technologies.	6	C,P,M
	CO5	Validate the designed solution to ensure impactfulness towards the selected problem.	5	C,P,M

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

CO PO and Mapping of CO PO 3rd Year

(2021-2025 BATCH)

Session:- 2023-24   Semester:- 5th

S.No.	Subject	Code
1	Machine Learning Techniques	KCS 055
2	Database Management System	KCS 501
3	Design and Analysis of Algorithm	KCS 503
4	Web Technology	KIT 501
5	Object Oriented System Design	KCS 054
6	Constitution of India, Law and Engineering	KNC 501
7	Database Management System Lab	KCS 551
8	Design and Analysis of Algorithm Lab	KCS 553
9	Web Technology Lab	KIT 551
10	Mini Project & Internship	KCS 554

Theory

Machine Learning Techniques		At the end of course, students will be able to													Knowledge Level	Knowledge Category
	CO1	Understand foundational concepts of machine learning approaches.													2	C
	CO2	Apply regression techniques like Linear Regression and Logistic Regression to solve real-world problems.													3	C , P
	CO3	Analyze the performance of Bayesian Learning methods on various datasets.													4	C , P
	CO4	Evaluate and compare various techniques like Support Vector Machines, Decision Trees, and Instance Based Learning on different datasets.													5	C , P
	CO5	Model the solution of real-life problems using Deep Learning techniques, Genetic Algorithms and Reinforcement Learning.													6	C , P, M

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

Database Management System		At the end of course, students will be able to													Knowledge Level	Knowledge Category
	CO1	Acquire knowledge of database design methodology for real-life applications.													2	C,P
	CO2	Apply the concept of an ER diagram to design an information model.													3	C,P
	CO3	Apply the concept of SQL to real-life databases.													3	C,P
	CO4	Analyze the redundancy problem in the database and reduce it using normalization.													4	C,P
	CO5	Identify the broad range of database management issues including integrity, security, and recovery transactions.													4	C,P

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

Design and Analysis of Algorithm		At the end of course, students will be able to													Knowledge Level	Knowledge Category
	CO1	**Analyze** running time of algorithms using asymptotic methods.														4	C, P
	CO2	**Analyze** advanced data structure algorithms to calculate their complexities.														4	C, P
	CO3	**Devise** solutions of Optimization problems using Dynamic Programming and Greedy Approach.														6	C, P, M
	CO4	**Formulate** solutions for optimization problems using backtracking and branch & bound techniques.														6	C, P, M
	CO5	**Understand** the concepts of NP Completeness, Randomized and Approximation Algorithms.														2	C
CO \ PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2			
CO1	3	3	2	2	1	-	-	-	-	-	-	2	2	2			
CO2	3	3	2	2	1	-	-	-	-	-	-	2	2	2			
CO3	3	3	3	2	1	-	-	-	-	-	-	2	2	2			
CO4	3	3	3	2	1	-	-	-	-	-	-	2	2	2			
CO5	2	2	1s	1	1	-	-	-	-	-	-	1	1	1			

Web Technology		At the end of course, students will be able to													Knowledge Level	Knowledge Category
	CO1	Apply OOP concept using Java to create desktop based programs.													K3	P
	CO2	Apply the concepts of HTML, CSS and DHTML to create attractive web pages and XML to create your own tags and document layout.													K3	P
	CO3	Apply JavaScript to process web page content at client machine and Socket programming to connect Systems.													K3	P
	CO4	Apply JDBC concepts to create database and perform CRUD operations using Java Programs.													K3	P
	CO5	Apply JSP and Servlets concepts in server side scripting to create and process web based Programs.													K3	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	2	2	2	3		
CO2	2	2	3	3	3	--	--	--	2	1	2	2	2	3		
CO3	3	2	2	2	2	--	--	--	2	1	2	2	1	2		
CO4	2	2	2	2	2	--	--	--	1	1	1	1	1	2		
CO5	3	3	3	3	3	--	--	--	2	2	2	2	2	3		

		At the end of course, students will be able to												Knowledge Level	Knowledge Category
Object Oriented System Design	CO1	**Understand** the application development and the insights of object-oriented programming to implement application.													2	C, P
	CO2	**Apply** the role of overall modelling concepts to develop object-oriented System structure.													3	C, P
	CO3	**Analyze** the structured analysis / structured design and the oops programming style.													4	C, P
	CO4	**Evaluate** the concepts of C++ for the implementation of object-oriented concepts.													5	C, P
	CO5	**Evaluate** the object-oriented paradigm concepts to implement real world problems in C++.													5	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	-	-	-	1	-	2	-	1
CO2	3	2	1	1	3	1	-	-	1	1	-	2	2	2
CO3	3	3	1	1	1	1	-	-	-	1	-	2	1	-
CO4	3	3	3	3	3	2	-	-	2	2	-	3	3	3
CO5	3	3	3	3	3	2	-	1	3	2	2	3	3	3

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Constitution of India, Law and Engineering	CO1	Identify and explore the basic features and modalities of the Indian constitution.	2	F,C
	CO2	Differentiate and relate the functioning of the Indian parliamentary system at the center and state level	3	F,C
	CO3	Differentiate different aspects of the Indian Legal System and its related bodies.	2	F,C
	CO4	Discover and apply different laws and regulations related to engineering practices.	2	F,C
	CO5	Correlate the role of engineers with different organizations and governance models	2	F,C

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

Practical

		At the end of course, students will be able to													Knowledge Level	Knowledge Category
Database Management System Lab	CO1	**Understand** and apply MYSQL/Oracle 10g for creating tables, views, indexes, sequences and other database objects.														2	C,P
	CO2	**Design** and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system.														3	P
	CO3	**Apply** the concept of SQL based on Case Study using DDL, DML														3	P
	CO4	**Apply** the concept of PL/SQL blocks, procedure functions, packages and triggers, cursors.														3	P
	CO5	**Demonstrate** entity integrity, referential integrity, key constraints, and domain constraints on database.														3	P

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

		At the end of course, students will be able to													Knowledge Level	Knowledge Category
Design and Analysis of Algorithm Lab	CO1	Analyze algorithm to solve problems by iterative approach.														4	C, P
	CO2	Analyze algorithm to solve problems by divide and conquer approach.														4	C, P
	CO3	Implement algorithm to solve problems by Greedy algorithm approach.														3	C, P
	CO4	Apply algorithm to solve problems by Dynamic programming, backtracking, branch, and bound approach.														3	P, M
	CO5	Implement algorithm to solve problems by branch and bound approach.														3	C, P

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Web Technology Lab	CO1	Apply OOP concept using Java to create desktop based programs.	3	P
	CO2	Apply the concepts of HTML, CSS and DHTML to create attractive web pages and XML to create your own tags and document layout.	3	P
	CO3	Apply JavaScript to process web page content at client machine and Socket programming to connect Systems.	3	P
	CO4	Apply JDBC concepts to create database and perform CRUD operations using Java Programs.	3	P
	CO5	Apply JSP and Servlets concepts in server side scripting to create and process web based Programs.	3	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	2	2	2	3
CO2	2	2	3	3	3	--	--	--	2	1	2	2	2	3
CO3	3	2	2	2	2	--	--	--	2	1	2	2	1	2
CO4	2	2	2	2	2	--	--	--	1	1	1	1	1	2
CO5	3	3	3	3	3	--	--	--	2	2	2	2	2	3

		At the end of course, students will be able to											Knowledge Level	Knowledge Category
Mini Project & Internship	CO1	Explore the real life problems and their implementation through Tools &Techniques.												3	C,P
	CO2	Expose the creative design process through the integration and application of diverse technical knowledge.												3	C,P
	CO3	Analyze the possible solutions to meet the requirements of the problem solving.												4	C,P
	CO4	Build a solution by employing a variety of tools and technologies.												6	C,P,M
	CO5	Validate the designed solution to ensure impactfulness towards the selected problem.												5	C,P,M

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

CO PO and Mapping of CO PO 4th Year

(2020-2024 BATCH)

Session:- 2023-24   Semester:- 7th

S.No.	Subject	Code
1	Deep Learning	KCS 078
2	Artificial Intelligence	KCS 071
3	Rural Development: Administration and Planning	KHU 701
4	Renewable Energy Resources	KOE 074
5	Artificial Intelligence Lab	KIT 751
6	Mini Project + Internship	KIT 752
7	Project	KIT 753

Theory

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Deep Learning	CO1	Apply the concept of neural networks, including layers and activation functions to observe deep learning models.	3	C,P
	CO2	Explain the concept of backpropagation to optimize neural network weights.	4	C,P
	CO3	Analyze different dimensionality reduction techniques for real world dataset.	4	C,P
	CO4	Evaluate different deep learning models for optimized solution of Natural Language Processing related problems.	5	C,P,M
	CO5	Design deep learning solutions for complex real-world Problems using different deep learning tools.	6	C,P,M

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Artificial Intelligence	CO1	Understand the concepts of artificial intelligence and intelligent agents.	2	C
	CO2	Apply basic principles of AI in solutions that require problem-solving methods.	3	C,P
	CO3	Determine the effectiveness of truths by knowledge representation methods in AI.	5	C,P
	CO4	Analyze intelligent agents by exploring the architecture and communication of agents.	4	C,P
	CO5	Analyze various AI applications in Information retrieval and extraction, Natural Language Possessing, speech recognition and Robots.	4	C,P

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

Rural Development : Administration and Planning		At the end of course, students will be able to												Knowledge Level	Knowledge Category
	CO1	Understand the definitions, concepts, andcomponents of Rural Development.												2	C	
	CO2	Distinguish among importance, structure,significance, and resources of Indian rural economy.												4	C,P	
	CO3	Discuss rural area development programs and theirimpact.												2	C	
	CO4	Review the different methods for human resourceplanning.												2	C	
	CO5	Describe the knowledge of Rural Industrialization andEntrepreneurship.												2	C	

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

Renewable Energy Resources		At the end of course, students will be able to												Knowledge Level	Knowledge Category
	CO1	**Discuss** the basic knowledge of non-conventional energy resources with focusing on solar cell.												2	C	
	CO2	**Explore** the various Solar Cell material and its efficiency**.**												3	C	
	CO3	**Examine** the working principle, performance and limitation of geothermal energy, MHD and fuel Cell.												4	C, P	
	CO4	**Explain** the working principle, performance and limitation of Wind Energy.												4	C, P	
	CO5	**Illustrate** the working principle, performance and limitation of OTEC and Wave and Tidal Energy.												4	C, P	

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

Practical

		At the end of course, students will be able to													Knowledge Level	Knowledge Category
Artificial Intelligence Lab	CO1	Demonstrate the features of the PROLOG programming language, including basic syntax, selection and search strategies of PROLOG.														3	C,P
	CO2	Explore syntax, semantics and natural deduction proof system of propositional and predicate logic.														4	C,P
	CO3	Implement the recursion and sequences using prolog programming.														5	C,P
	CO4	Design various real-life problems using PROLOG programming language skills.														6	C,P,M
	CO5	Demonstrate LISP programming language skills for solving real life problems.														3	C,P

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

		At the end of course, students will be able to	Knowledge Level	Knowledge Category
Mini Project & Internship	CO1	Explore the real life problems and their implementation through Tools &Techniques.	3	C,P
	CO2	Expose the creative design process through the integration and application of diverse technical knowledge.	3	C,P
	CO3	Analyze the possible solutions to meet the requirements of the problem solving.	4	C,P
	CO4	Build a solution by employing a variety of tools and technologies.	6	C,P,M
	CO5	Validate the designed solution to ensure impactfulness towards the selected problem.	5	C,P,M

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

Project		At the end of course, students will be able to												Knowledge Level	Knowledge Category
	CO1	**Select** and **summarize** all aspects of the real life problem through survey.												2	C, P
	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	**Justfy/defend** opinions, validity of ideas or quality of work based on a set of criteria.												5	C, P,M
	CO5	**Test** the working model and modify related phase accordingly. Finally integrate all phases												6	C, P,M

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