KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**

Course Name: Sensor and Instrumentation **Course Code: BOE305** **Course Coordinator Name: Dr. Rajesh Yadav**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	**Apply** the use of sensors for measurement of displacement, force, and pressure.	PO1, PO2, PO3, PO4, PO11, PSO1 PSO2	3	Conceptual, Procedural
CO2	**Employ** commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PSO1, PSO2	3	Conceptual, Procedural
CO3	**Demonstrate** the use of virtual instrumentation in automation industries.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	3	Factual, Procedural
CO4	**Identify** and use data acquisition methods.	PO1, PO2, PO3, PO4, PO5, PO6, PO5, PSO2	1	Conceptual, Procedural
CO5	**Comprehend** intelligent instrumentation in industrial automation.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	2	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Vidyadhar Gupta		5.	
2. Ms. Trapti Mudgal		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: Sensor and Instrumentation **Course Code: BOE305** **Course Coordinator Name: Dr. Rajesh Yadav**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2							2		3	2
CO2	3	3	2	3	2						3		2	2
CO3	3	2	2	3	3	3					2		2	2
CO4	2	3	2	2	2	3	2				2		2	2
CO5	2	2	2	2	2	2					2		2	2
PO Target	2.6	2.4	2	2.4	2.25	2.66	2				2.2		2.2	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Vidyadhar Gupta		5.	
2. Ms. Trapti Mudgal		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-2025** **Year: II** **Semester: III**
Course Name: UHV& PE **Course Code: BVE 301** **Course Coordinator Name: Prof. Saurav Chandra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Articulate the significance of value, skill, happiness, prosperity and the process of value education.	PO6, PO7, PO8, PO9, PO12	Understand	Conceptual, Procedural
CO2	Explore the concept of harmony in the human being (in Myself) being 'I' & 'body' as separate entity and their coexistence.	PO6, PO7, PO8, PO9, PO12	Apply	Conceptual, Procedural
CO3	Interpret the process of developing harmony in family, society and in universal order.	PO6, PO7, PO8, PO9, PO12	Understand	Conceptual, Procedural
CO4	Express the process of developing harmony in nature as self-organizing unit and in its coexistence.	PO6, PO7, PO8, PO9, PO12	Understand	Conceptual, Procedural
CO5	Analyze ethical, unethical practices and strategy in larger order based on case studies.	PO6, PO7, PO8, PO9, PO12	Analyze	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Mr. Saurav Chandra		5.	
2. Ms. Deepti Singh		6.	
3. Dr. Seema Meitry		7.	
4. Mr. Pavan Sharma		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2024-2025** **Year: II** **Semester: III**

Course Name: UHV&PE **Course Code: BVE 301** **Course Coordinator Name : Prof. Saurav Chandra**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1						3	1	2	3			2		
CO2						3	1	2	3			2		
CO3						3	1	2	3			3		
CO4						2	3	2	2			3		
CO5						2	3	3	2			3		
PO Target						**2.6**	**1.8**	**2.6**	**2.6**			**2.6**		

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Mr. Saurav Chandra		5.	
2. Ms. Deepti Singh		6.	
3. Dr. Seema Meitry		7.	
4. Mr. Pavan Sharma		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**

Course Name: Data Structures **Course Code: BCS 301** **Course Coordinator Name: Ms. Deepti Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply the concepts of Array and Linked List in problem solving.	PO1, PO2, PO3, PO4, PO12,PSO1	3 (Apply)	Conceptual, Procedural
CO2	Implement the working of abstract data types like Stack and Queue to solve scenario-based problems.	PO1, PO2, PO3, PO4, PO12,PSO1	3 (Apply)	Conceptual, Procedural
CO3	Examine the working of various Searching and Sorting algorithms on scenario-based problems in terms of complexity.	PO1, PO2, PO3, PO4, PO12, PSO1	3 (Apply)	Conceptual, Procedural
CO4	Examine the various types of Tree data structure in terms of data storage, memory utilization, data representation, and optimization.	PO1, PO2, PO3, PO4, PO12, PSO1	3 (Apply)	Conceptual, Procedural
CO5	Examine the problem statements in terms of Graphs to solve the real-world problems in an easy manner.	PO1, PO2, PO3, PO4, PO12,PSO1	3 (Apply)	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Deepti Singh		5.	
2. Mr. Samir Sheshank		6.	
3. Mr. Anshuman Kalia		7.	
4. Mr. Pavan Sharma		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: Data Structure **Course Code: BCS 301** **Course Coordinator Name: Ms. Deepti Singh**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	2	1	-	-	-	-	-	-	-	3	3	-
CO2	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO3	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO4	3	3	2	2	-	-	-	-	-	-	-	3	3	-
CO5	3	3	2	2	-	-	-	-	-	-	-	3	3	-
PO Target	3	3	2.4	1.8	-	-	-	-	-	-	-	**3**	**3**	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Deepti Singh		5.	
2. Mr. Samir Sheshank		6.	
3. Mr. Anshuman Kalia		7.	
4. Mr. Pavan Sharma		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: COA **Course Code: BCS 302** **Course Coordinator Name: Mr. Upendra Mishra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	**Describe** the basic organization and operation of the components of a digital computer system	PO1, PO2, PO3, PO4, PO12, PSO1	3	Conceptual, Procedural
CO2	**Illustrate** various arithmetic and logical operations on different types of numbers to design an arithmetic and logic unit.	PO1, PO2, PO3, PO4, PO12, PSO1	4	Conceptual, Procedural
CO3	**Analyze** the performance issues of the processor and classify the control unit implementation techniques.	PO1, PO2, PO3, PO4, PO12, PSO1,PSO2	4	Conceptual, Procedural
CO4	**Categorize** the hierarchical memory system and examine the virtual memory implementation techniques.	PO1, PO2, PO3, PO4, PO12, PSO1,PSO2	4	Conceptual, Procedural
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.	PO1, PO2, PO3, PO4, PO12, PSO1,PSO2	4	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra		5.	
2. Dr. Swati Sharma		6.	
3. Ms. Himanshi Chaudhary		7.	
4. Mr. Harsh Modi		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: COA **Course Code: BCS 302** **Course Coordinator Name: Mr. Upendra Mishra**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
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
PO Target	2.6	2	1.8	1	-	-	-	-	-	-	-	1	1.2	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra		5.	
2. Dr. Swati Sharma		6.	
3. Ms. Himanshi Chaudhary		7.	
4. Mr. Harsh Modi		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: II** **Semester: III**

Course Name: Discrete Structure and Theory of Logic **Course Code: BCS302** **Course Coordinator Name: Vipin Deval**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	**Acquire** Knowledge of sets and relations for solving problems of POSET and lattices.	PO1, PO2, PO3, PO4, PO5, PO12 & PSO1	**Apply**	Conceptual & Procedural
CO2	**Apply** fundamental concepts of functions and Boolean algebra for solving the problems of logical abilities.	PO1, PO2, PO3, PO5, PO12 & PSO1	**Apply**	Conceptual & Procedural
CO3	**Employ** the rules of propositions and predicate logic to solve the complex and logical problems.	PO1, PO2, PO3, PO4, PO5, PO12 & PSO1	**Apply**	Factual, Conceptual, and Procedural
CO4	**Explore** the concepts of group theory and their applications for solving the advance technological problems.	PO1, PO2, PO3, PO5, PO12 & PSO1	**Analyze**	Conceptual & Procedural
CO5	**Illustrate** the principles and concepts of graph theory for solving problems related to computer science.	PO1, PO2, PO3, PO5, PO12 & PSO1	**Analyze**	Factual, Conceptual, and Procedural

Faculty Members Teaching the Course	Signature
1. Mr. Vipin Deval	
2. Ms. Bharti	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Program Name: B.Tech	Academic Session:2024-25	Semester: III
Course name: DSTL	Course Code: BCS-303	Faculty Name: Vipin Deval

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	**Acquire** Knowledge of sets and relations for solving problems of POSET and lattices.	**Apply**	Conceptual, Procedural
CO2	**Apply** fundamental concepts of functions and Boolean algebra for solving the problems of logical abilities.	**Apply**	Conceptual, Procedural
CO3	**Employ** the rules of propositions and predicate logic to solve the complex and logical problems.	**Apply**	Factual, Conceptual, Procedural
CO4	**Explore** the concepts of group theory and their applications for solving the advance technological problems.	**Analyze**	Conceptual, Procedural
CO5	**Illustrate** the principles and concepts of graph theory for solving problems related to computer science.	**Analyze**	Factual, Conceptual, Procedural

Mapping of Course outcomes with Program outcomes CO-POs Matrix

DSTL (BCS-303)

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO1	3	1	1	1	1	-	-	-	-	-	-	1	-	1
CO2	3	1	1	-	2	-	-	-	-	-	-	1	-	1
CO3	3	1	1	2	2	-	-	-	-	-	-	1	-	1
CO4	3	2	1		1	-	-	-	-	-	-	1	-	2
CO5	3	3	2		2	-	-	-	-	-	-	2	-	2
PO Target	**3**	**1.6**	**1.2**	**1.5**	**1.6**	**-**	**-**	**-**	**-**	**-**	**-**	**1.2**	**-**	**1.4**

Signature of Course Coordinator **Signature of Addl. HoD** **Signature of Dean**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**

Course Name: Python Programming **Course Code: BCC302** **Course Coordinator Name: Ms. Himanshi Chaudhary**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the fundamentals of Python syntax, semantics and Programming.	PO1, PO2, PSO1	Understand	Conceptual
CO2	Acquire proficiency in handling strings and functions and be fluent in using Python control flow statements.	PO1, PO2, PO3,PO12, PSO1	Apply	Conceptual,Procedural
CO3	Determine the methods for ease of use to write python programs by utilizing the data structures like lists, dictionaries, tuples and sets.	PO1, PO2, PO3, PO4,PO5,PO12, PSO1, PSO2	Apply	Conceptual,Procedural
CO4	Apply the commonly used operations involved in file handling.	PO1, PO2, PO3, PO4,PO5, PO12, PSO1, PSO2	Apply	Conceptual,Procedural
CO5	Explain and use different in-built functions of packages and connect with GUI programming.	PO1, PO2, PO3, PO4,PO5, PO12, PSO1, PSO2	Apply	Conceptual,Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Omprakash Kushwaha		4. Dr. Neha Yadav	
2. Mr, Vishal kumar		5. Mr. Gaurav Parashar	
3. Ms. Vansika Gupta		6.Ms. Himanshi Chaudhary	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Department of Computer Science and Engineering

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Program Name: B. Tech **Academic Session: 2024-25** **Year: II** **Semester: III**

Course Name: Python Programming **Course Code: BCC302** **Course Coordinator Name: Ms. Himanshi Chaudhary**

CO - PO/PSO/APO Matrix

BCC302	Program Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO2	2	2	1	-	-	-	-	-	-	-	-	2	2	1
CO3	3	3	1	1	1	-	-	-	-	-	-	2	2	1
CO4	3	2	2	1	1	-	-	-	-	-	-	2	2	1
CO5	3	3	2	1	1	-	-	-	-	-	-	2	2	1
PO Target	2.6	2.2	1.5	1	1	-	-	-	-	-	-	2	1.8	1

Faculty Members Teaching the Course	Signature
Mr. Omprakash Kushwaha	
Mr. Vishal Kumar	
Ms. Vansika Gupta	
Dr. Neha Yadav	
Mr. Gaurav Parashar	
Ms. Himanshi Chaudhary	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**

Course Name: DS Lab **Course Code: BCS 351** **Course Coordinator Name: Ms. Deepti Singh**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	**Perform** the primitive operation on various types of data structures.	PO1, PO2, PO3, PO12,PSO1	3(Apply)	Conceptual, Procedural
CO2	**Apply** the concepts of data structure in problem solving.	PO1, PO2, PO3, PO12,PSO1	3(Apply)	Conceptual, Procedural
CO3	**Make** a solution for the scenario-based problems in terms of algorithm and programming code on competitive platforms.	PO1, PO2, PO3, PO12,PSO1	4(Analyse)	Conceptual, Procedural
CO4	**Design** a solution for a project-based problem as a team and present the solution in class.	PO1, PO2, PO3, PO9, PO10, PO11,PO12, PSO1	6(Create)	Procedural, Metacognitive

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Deepti Singh		5.	
2. Mr. Samir Sheshank		6.	
3. Mr. Anshuman Kalia		7.	
4. Mr. Pavan Sharma		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: DS Lab **Course Code: BCS 351** **Course Coordinator Name: Ms. Deepti Singh**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	2									2	3	
CO2	3	3	3									2	3	
CO3	3	3	3									2	3	
CO4	3	3	3						2	2	1	1	3	
PO Target	**2.75**	**2.5**	**2.75**						**2**	**2**	**1**	**1.75**	**3**	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Deepti Singh		5.	
2. Mr. Samir Sheshank		6.	
3. Mr. Anshuman Kalia		7.	
4. Mr. Pavan Sharma		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: COA Lab **Course Code: BCS 352** **Course Coordinator Name: Mr. Upendra Mishra**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Examine the output of the basic logic gates for different combinations of inputs.	PO1, PO2, PO3, PO4, PO5, PO9, PO10	3	Procedural
CO2	Design the combinational circuits for binary arithmetic (such as adders, subtractors, and multiplier) and code converter.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12	3	Procedural
CO3	Design combinational circuits for encoders/decoders and selection devices multiplexers/demultiplexers using logic gates.	PO1, PO2, PO3, PO4,PO5, PO9, PO10, PO12, PSO1, PSO2	3	Procedural
CO4	Design the basic building block of the sequential circuits (i.e., SR and D Flip Flops) using logic gates.	PO1, PO2, PO3, PO4,PO5, PO9, PO10, PO12, PSO1, PSO2	3	Procedural
CO5	Design the 2-bit Arithmetic Logic Unit using logic gates.	PO1, PO2, PO3, PO4,PO5, PO9, PO10, PO12, PSO1, PSO2	3	Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra		5.	
2. Dr. Swati Sharma		6.	
3. Ms. Himanshi Chaudhary		7.	
4. Mr. Harsh Modi		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: II** **Semester: III**
Course Name: COA Lab **Course Code: BCS 352** **Course Coordinator Name: Mr. Upendra Mishra**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
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
PO Target	2.2	2.8	2.8	1.8	1				1	1		1	1.67	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra		5.	
2. Dr. Swati Sharma		6.	
3. Ms. Himanshi Chaudhary		7.	
4. Mr. Harsh Modi		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech Academic Session: 2024-25 Year: II Semester: III Course Name: Web Designing Workshop
Course Code:BCS353 Course Coordinator Name: Dr. Seema Maitrey

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply the concept of Hypertext markup language (HTML) to structure a web page and integrate CSS to style it.	PO1, PO5, PO9, PO10, PO11, PO12 PSO2	Apply	Conceptual & Procedural
CO2	Apply the extensive customization options of Bootstrap frameworks to mark the appearance and style of the website.	PO1, PO5, PO9, PO10, PO11, PO12 PSO2	Apply	Conceptual & Procedural
CO3	Use JavaScript to make web pages and validate the data on client-end.	PO1, PO5, PO9, PO10, PO11, PO12 PSO2	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	**Signature**
Dr. Seema Maitrey	
Prof. Vishal	
Prof. Himon Kalita	
Prof. Anshuman Kalia	
Prof. Pavan Sharma	
Prof. Sameer Shashank	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech Academic Session: 2024-25 Year: II Semester: III Course Name: Web Designing Workshop Course Code: BCS353 Course Coordinator Name: Dr. Seema Maitrey

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1	-	-	-	2		-	-	1	1	1	3	-	1
CO2	1	-	-	-	2	-	-	-	1	1	1	1	-	2
CO3	2	-	-	-	2	-	-	-	1	1	2	2	-	2
PO Target	**1.3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**1**	**1**	**1.3**	**2**	**-**	**1.6**

Faculty Members Teaching the Course	Signature
Dr. Seema Maitrey	
Prof. Vishal	
Prof. Himon Kalita	
Prof. Anshuman Kalia	
Prof. Pavan Sharma	
Prof. Sameer Shashank	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: DBMS **Course Code: BCS-501** **Course Coordinator Name: Dr. Neha Yadav**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply database knowledge to design solutions for real-life problems	PO1, PO4, PO5, PO8, PO9, PO11, PO12,APO1	Apply	Conceptual & Procedural
CO2	Apply query processing techniques using SQL and PL/SQL to automate the real time problems of databases.	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12,APO2	Apply	Conceptual & Procedural
CO3	Solve the redundancy problem in database tables using normalization.	PO1, PO2, PO4, PO5, PO8, PO9, PO10, PO11, PO12,APO2	Apply	Conceptual & Procedural
CO4	Understand the concepts of transactions and recovery schemes.	PO1, PO2, PO4, PO11, PO12,APO2	Understand	Conceptual & Procedural
CO5	Understand the concepts of concurrency control techniques.	PO1, PO2, PO4, PO8, PO11, PO12,APO2	Understand	Conceptual & Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Dilkeshwar Pandey		5.	
2. Dr. Neha Yadav		6.	
3. Dr. Preeti Garg		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: V**
Course Name: DBMS **Course Code: BCS-501** **Course Coordinator Name:** Dr. Neha Yadav

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	3	3	2	-	-	-	2	2	1	2	2	3
CO2	3	2	3	2	3	-	-	-	-	-	1	1	-	3
CO3	3	2	3	2	2	1	-	-	2	3	1	1	-	3
CO4	3	3	3	2	3	2	1	1	-	-	1	1	-	3
CO5	3	3	3	2	3	2	1	1	-	-	1	1	-	3
PO Target	3	2.4	3	2.2	2.6	1	0.4	0.4	0.8	1	1	1.2	0.4	3

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Neha Yadav		5.	
2. Dr. Dilkeshwar Pandey		6.	
3. Dr. Preeti Garg		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: Web Technology **Course Code: BCS502** **Course Coordinator Name: Mr. Pushpendra Kumar**

Course Outcomes

After completion of the course, the student will be able to		**Relevant POs/ PSOs/ APOs**	**Revised Bloom's Level (BL)**	**Knowledge Category (KC)**
CO No.	**Statement of Course Outcome**			
CO1	Understand the fundamentals of web development with HTML and XML.	PO1, PO2, PO3, PO4, PO9, PO12, PSO1	**BL2**	Factual/Conceptual
CO2	Apply CSS to design responsive web applications.	PO1, PO2, PO3, PO4, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural
CO3	Apply JavaScript, AJAX for scripting HTML documents and networking concepts required for a website.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural
CO4	Implement server-side applications using EJB & Node.js with MongoDB.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural
CO5	Apply components of Servlets and Java Server Pages(JSP) to handle HTTP requests and session tracking.	PO1, PO2, PO3, PO4, PO5, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Pushpendra Kumar			
2. Dr. Seema Maitrey			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: Web Technology **Course Code: BCS502** **Course Coordinator: Mr. Pushpendra Kumar**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome(PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO-1	1	1	1	1	-	-	-	-	1	-	-	2	2	-
CO-2	1	1	1	1	-	-	-	-	1	-	-	2	2	-
CO-3	2	2	2	2	2	-	-	-	2	-	-	2	2	-
CO-4	2	2	2	3	3	-	-	-	2	-	-	2	2	-
CO-5	2	2	2	2	2	-	-	-	2	-	-	2	2	-
PO Target	1.6	1.6	1.6	1.8	2.33	-	-	-	1.6	-	-	2	2	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Pushpendra Kumar			
2. Dr. Seema Maitrey			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** 2024-25 **Year:** III **Semester:** V
Course Name: Design and Analysis of Algorithms **Course Code:** BCS503 **Course Coordinator Name:** Rahul Kumar Sharma

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Analyze the performance of algorithms using different asymptotic analysis methods	PO1, PO2, PO3, PO12, PSO2	Analyze-4	C, M
CO2	Understand the concept of Advance Data Structures.	PO1, PO2, PO3, PO12, PSO2	Understanding-2	C
CO3	Address computational problems using divide-and-conquer, greedy, and dynamic programming techniques	PO1, PO2, PO3,PO12, PSO2	Apply - 3	C, P
CO4	Illustrate the applications of backtracking, branch-and-bound, string matching, and approximation algorithms	PO1, PO2, PO3, PO12, PSO2	Apply - 3	C, P
CO5	Understand the concept of P & NP-Problems	PO1, PO2, PO3,PO12, PSO2	Understanding -2	C

Faculty Members Teaching the Course	Signature
1. Rahul Kumar Sharma	
2. Shruti Agarwal	
3.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** 2024-25 **Year:** III **Semester:** V
Course Name: Design and Analysis of Algorithms **Course Code:** BCS503 **Course Coordinator Name:** Rahul Kumar Sharma

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	-	-	-	-	-	-	-	-	2	-	3
CO2	3	2	2	-	-	-	-	-	-	-	-	2	-	3
CO3	3	2	2	-	-	-	-	-	-	-	-	2	-	3
CO4	3	2	2	-	-	-	-	-	-	-	-	2	-	3
CO5	3	2	2	-	-	-	-	-	-	-	-	2	-	3
PO Target	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**

Faculty Members Teaching the Course	Signature
1. Rahul Kumar Sharma	
2. Shruti Agarwal	
3.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: Data Analytics **Course Code: BCS052** **Course Coordinator Name: Mr. Gagan Thakral**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Discuss the life cycle phases of Data Analytics through discovery, planning and building.	PO1, PO4, PO12, PSO1	**Understand**	**Conceptual**
CO2	Apply various Data Analysis Techniques.	PO1, PO4, PO5, PO10, PO12, PSO1	**Apply**	**Procedural**
CO3	Apply mining techniques on streaming data.	PO1, PO4, PO5, PO10, PO12, PSO1	**Apply**	**Procedural**
CO4	Compare different clustering and frequent pattern mining algorithms.	PO1, PO2, PO4, PO5, PO10, PO12, PSO1	**Analyze**	**Procedural**
CO5	Apply R tool for developing and evaluating real time applications.	PO1, PO4, PO5, PO10, PO12, PSO1	**Apply**	**Procedural**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
3. Mr. Gagan Thakral			
4. Mr. Himan Kalita			
5. Ms. Shruti Kumari			
6. Mr. Rishabha Sachan			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: Data Analytics **Course Code: BCS052** **Course Coordinator Name: Mr. Gagan Thakral**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome(PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO-1	2	-	-	-	-	-	-	-	-	-	-	2	1	-
CO-2	2	-	-	2	1	-	-	-	-	1	-	2	2	-
CO-3	2	-	-	2	1	-	-	-	-	1	-	2	2	-
CO-4	2	2	-	2	1	-	-	-	-	1	-	2	2	-
CO-5	2	-	-	2	1	-	-	-	-	2	-	2	2	-
PO Target	2	2	-	2	1	-	-	-	-	1.25	-	2	1.8	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
7. Mr. Gagan Thakral			
8. Mr. Himan Kalita			
9. Ms. Shruti Kumari			
10. Mr. Rishabha Sachan			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**
Course Name: MLT **Course Code: BCS 055** **Course Coordinator Name: Dr. Sushil Kumar**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	To understand the need for machine learning for various problem solving		2	Conceptual
CO2	To Apply a wide variety of learning algorithms for solving different type of real word problems		3	Conceptual, Procedural
CO3	To understand the latest trends in machine learning		2	Conceptual
CO4	To design appropriate machine learning algorithms to real-world problem		3	Conceptual, Procedural
CO5	To optimize the models learned and report on the expected accuracy		4	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sushil kumar		5.	
2. Mr. Gaurav Parashar		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: III** **Semester: V**
Course Name: MLT **Course Code: BCS 055** **Course Coordinator Name: Dr. Sushil Kumar**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	1			1	1					2		
CO2	2	2	2	1	1							2		
CO3	2	2	2	1	1	1	1					2		
CO4	2	2	3	3	2	1	1					1	1	
CO5	2	2	2	1	3							1	1	
PO Target	2	1.8	2	1.5	1.75	1	1					1.6	1	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sushil kumar		5.	
2. Mr. Gaurav Parashar		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: COI **Course Code: BNC 501** **Course Coordinator Name: Mr. Vijay Patidar**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Explore the basic features and modalities about the Indian constitution.	PO6, PO7	2	Factual /Conceptual
CO2	Differentiate the functioning of Indian parliamentary system at the center and state level	PO6, PO7	4	Factual/ Procedural
CO3	Differentiate different aspects of the Indian Legal System and its related bodies.	PO6, PO7,PO8	4	Factual/ Procedural
CO4	Discover different laws and regulations related to engineering practices.	PO6, PO7,PO8,PO10	2	Factual /Conceptual
CO5	Correlate role of engineers with different organizations and governance models	PO6, PO7, PO8, PO9, PO10, PS11,PS12	2	Factual /Conceptual

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Vijay Patidar			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: III** **Semester: V**
Course Name: COI **Course Code:** BNC-501 **Course Coordinator Name: Mr. Vijay Patidar**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	3	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	2	1	-	-	-	-	-	-
CO4	-	-	-	-	-	3	2	2	-	2	-	-	-	-
CO5	-	-	-	-	-	2	2	2	2	2	2	2	-	-
PO Target	-	-	-	-	-	**2.80**	**2**	**1.67**	**2**	**2**	**2**	2	-	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Vijay Patidar			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: DBMS Lab **Course Code: BCS 551** **Course Coordinator Name: Dr. Neha Yadav**

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Design an information model expressed in the form of ER diagram.	Create	Procedural & Metacognitive	Design an information model expressed in the form of ER diagram.
CO2	Apply SQL queries to implement and manipulate the database and provide different constraints.	Apply	Procedural	Apply SQL queries to implement and manipulate the database and provide different constraints.
CO3	Apply PL/SQL to automate the real time problems of databases.	Apply	Procedural	Apply structured query language to automate the real time problems of databases.

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Neha Yadav		5.	
2. Dr. Preeti Garg		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: III** **Semester: V**
Course Name: DBMS Lab **Course Code: BCS 551** **Course Coordinator Name: Dr. Neha Yadav**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO 1	2	1	3	2	3	-	1	1	1	3	2	1	-	3
CO 2	2	1	3	2	3	-	-	-	-	2	2	1	-	3
CO 3	3	2	2	-	3	-	-	1	-	-	-	-	-	-
PO Target	2.67	1.33	2.67	2	3	-	1	1	1	2.5	2	1	-	3

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Neha Yadav		5.	
2. Dr. Preeti Garg		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: Web Technology Lab **Course Code:BCS552** **Course Coordinator Name: Mr. Pushpendra Kumar**

Course Outcomes

After completion of the course, the student will be able to		**Relevant POs/ PSOs/ APOs**	**Revised Bloom's Level (BL)**	**Knowledge Category (KC)**
CO No.	**Statement of Course Outcome**			
CO1	Implement HTML, CSS, JavaScript and XML to develop dynamic and responsive website.	PO1, PO2, PO2, PO4, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural
CO2	Implement different components of Java Bean and Node.js to develop web application with MongoDB	PO1, PO2, PO2, PO4, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural
CO3	Construct server-side java application using Servlet & JSP tools to process request and response data.	PO1, PO2, PO2, PO4, PO9, PO12, PSO1	**BL3**	Conceptual/Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Pushpendra Kumar			
2. Dr. Seema Maitrey			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: III** **Semester: V**

Course Name: Web Technology Lab **Course Code: BCS552** **Course Coordinator: Mr. Pushpendra Kumar**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome(PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO-1	1	2	2	1	1	-	-	-	2	-	-	2	2	-
CO-2	2	2	2	3	3	-	-	-	2	-	-	2	2	-
CO-3	2	2	2	2	2	-	-	-	2	-	-	2	2	-
PO Target	1.67	2	2	2	2	-	-	-	2	-	-	2	2	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
11. Mr. Pushpendra Kumar			
12. Dr. Seema Maitrey			

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** 2024-25 **Year:** III **Semester:** V
Course Name: DAA Lab **Course Code:** BCS553 **Course Coordinator Name:** Rahul Kumar Sharma

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Implement algorithm to solve problems by iterative and recursive approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply - 3	P
CO2	Implement algorithm to solve problems by divide and conquer approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply - 3	P
CO3	Implement algorithm to solve problems by Greedy algorithm approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply - 3	P
CO4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Apply - 3	P

Faculty Members Teaching the Course	Signature
1. Rahul Kumar Sharma	
2. Shruti Agarwal	
3.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** 2024-25 **Year:** III **Semester:** V
Course Name: DAA Lab **Course Code:** BCS553 **Course Coordinator Name:** Rahul Kumar Sharma

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	1	1	2	-	-	-	-	-	-	1	-	3
CO2	3	2	1	1	2	-	-	-	-	-	-	1	-	3
CO3	3	2	1	1	2	-	-	-	-	-	-	1	-	3
CO4	3	2	1	1	3	-	-	-	-	-	-	1	-	3
PO Target	**3**	**2**	**1**	**1**	**2.25**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**3**

Faculty Members Teaching the Course	Signature
4. Rahul Kumar Sharma	
5. Shruti Agarwal	
6.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: 7th**

Course Name: Project Management and Entrepreneurship Course Code: KHU702 **Course Coordinator Name: Mr. Umang Rastogi**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the theories of entrepreneurship and Entrepreneurial development programs.	**PO6, PO9, PO11**	**2**	Factual,
CO2	Create innovative business ideas and market opportunities for business development.	**PO6, PO9, PO11**	**2**	Conceptual,
CO3	Understand the importance of the Project life cycle and different types of appraisal techniques.	**PO6, PO7, PO9, PO10, PO11, PO12**	**2**	Conceptual
CO4	Define different types of project financing requirements on the basis of cash flow statements.	**PO6, PO9, PO10, PO11, PO12**	**3**	Procedural
CO5	Describe social entrepreneurship opportunities and risk management techniques in social enterprises.	**PO6, PO7, PO9, PO11, PO12**	**2**	Conceptual

Faculty Members Teaching the Course	Signature
1. Mr. Umang Rastogi	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
- The statement of a CO must be formed considering a proper structure having mandatory and optional parts. The mandatory parts are Action & Knowledge and optional parts are Condition and Criteria.

KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: 7th**

Course Name: Project Management and Entrepreneurship Course Code: KHU702 **Course Coordinator Name: Mr. Umang Rastogi**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-	-	-	-	1	-	-	2	-	2	-	-	-
CO2	-	-	-	-	-	1	-	-	1	-	1	-	-	-
CO3	-	-	-	-	-	2	1	-	2	1	1	1	-	-
CO4	-	-	-	-	-	1	-	-	2	2	2	1	-	-
CO5	-	-	-	-	-	2	2	-	**2**		1	1	-	-
PO Target	-	-	-	-	-	**1.17**	**2**	-	**1.5**	1	**3**	**1**	-	-

Faculty Members Teaching the Course	Signature
1. Mr. Umang Rastogi	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: 7th**
Course Name: Cryptography & Network Security **Course Code: KCS074** **Course Coordinator Name: Dr. Madhu Gautam**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Apply the knowledge of cryptographic techniques to prevent attacks on computer security.	**POs:**1,2,3,4,5,6,8,12 **PSOs:** 1, 2	Apply	Conceptual, Procedural
CO2	Discover the mathematical foundation of cryptographic algorithms for protecting data.	**POs:** 1,2,3,4,5,6,8,12 **PSOs:** 1, 2	Apply	Conceptual, Procedural
CO3	Analyze the vulnerabilities of data authentication approaches.	**POs:** 1,2,3,4,5,6,8,12 **PSOs:** 1, 2	Analyze	Conceptual, Procedural
CO4	Examine the key management and distribution techniques.	**POs:** 1,2,3,4,5,6,8,12 **PSOs:** 1, 2	Apply	Conceptual, Procedural
CO5	Explore the mechanisms for IP and system security.	**POs:** 1,2,3,4,5,6,8,12 **PSOs:** 1, 2	Apply	Conceptual, Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Madhu Gautam	
2. Mr. Saurav Chandra	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Department of Computer Science & Engineering

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: 7th**

Course Name: Cryptography & Network Security **Course Code: KCS074** **Course Coordinator Name: Dr. Madhu Gautam**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	1	2	1	1	1	-	2	-	-	-	1	2	2
CO2	3	3	2	1	1	1	-	2	-	-	-	1	2	2
CO3	2	3	2	1	1	1	-	2	-	-	-	1	2	2
CO4	2	2	2	1	1	2	-	2	-	-	-	1	2	2
CO5	2	3	2	1	1	1	-	2	-	-	-	1	2	2
PO Target	2.4	2.8	2	1	1	1.2	-	2	-	-	-	1	2	2

Faculty Members Teaching the Course	Signature
1. Dr. Madhu Gautam	
2. Mr. Saurav Chandra	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: 7th**

Course Name: Cloud Computing **Course Code: KCS713** **Course Coordinator Name: Dr. Ankur Bhardwaj**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the evolution & principles of cloud computing.	**POs:**1,2,5,9,12 **PSOs:** 2	Understand	Factual Conceptual
CO2	Apply Virtualization of hardware and software resources for Cloud Computing.	**POs:** 1,2,5,9,10,12 **PSOs:** 2	Understand	Conceptual, Procedural
CO3	Implement data access management, data storage and computing services on Cloud.	**POs:** 1,2,5,8,9,10,12 **PSOs:** 1, 2	Understand	Conceptual, Procedural
CO4	Explain Inter cloud resources management, cloud storage services and Security Services.	**POs:** 1,2,5,8,9,10,12 **PSOs:** 1, 2	Apply	Factual Conceptual
CO5	Analyze standards and applications of advanced cloud technologies.	**POs:** 1,2,3,4,5,8,9,10,1112 **PSOs:** 1, 2	Analyze	Conceptual, Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Ankur Bhardwaj	
2. Mr. Gaurav Parashar	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: 7th**

Course Name: Cloud Computing **Course Code: KCS713** **Course Coordinator Name: Dr. Ankur Bhardwaj**

CO - PO/PSO/APO Matrix

CO No.	PSO/ APO													
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	1	-	-	2	-	-	-	1	-	-	2	2	1
CO2	2	1	-	-	2	-	-	-	1	1	-	2	2	1
CO3	2	1	-	-	2	-	-	-	1	1	-	2	2	1
CO4	3	2	-	-	2	-	-	2	1	1	-	2	2	2
CO5	3	3	2	2	3	-	-	2	2	1	2	2	2	3
PO Target	2.4	1.6	2	2	2.2	-	-	2	1.2	1	2	2		1.6

Faculty Members Teaching the Course	Signature
1. Dr. Ankur Bhardwaj	
2. Mr. Gaurav Parashar	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: IV** **Semester: VII**

Course Name: RER **Course Code: KOE 074** **Course Coordinator Name: Mr. Kapil Gandhi**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	**Understand** various non-conventional energy resources and their availability along with knowledge on solar cells.	PO1, PO4, PO6, PO7, PO10, PO12	2	Factual
CO2	**Apply** the concept of solar radiation on flat plate and focusing type collectors to convert solar energy into electrical energy.	PO1, PO4, PO6, PO7, PO10, PO12	3	Conceptual
CO3	**Understand** the concept of electrical energy generation from geothermal energy, magneto-hydro dynamics and fuel cells.	PO1, PO4, PO6, PO7, PO10, PO12	2	Conceptual
CO4	**Understand** the concept of electrical energy generation from thermo- electrical, thermionic and wind energy conversions.	PO1, PO4, PO6, PO7, PO10, PO12	2	Conceptual
CO5	**Understand** biomass, ocean thermal, wave and tidal wave energy conversions.	PO1, PO4, PO6, PO7, PO10, PO12	2	Conceptual

Faculty Members Teaching the Course	Signature
1. Mr. Kapil Gandhi	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: IV** **Semester: VII**
Course Name: RER **Course Code: KOE 074** **Course Coordinator Name: Mr. Kapil Gandhi**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1			1		2	3			1		1		
CO2	3			2		3	3			1		2		
CO3	1			2		2	3			1		2		
CO4	1			2		2	3			1		2		
CO5	1			2		2	3			1		2		
PO Target	1.4			1.8		2.2	3			1		1.8		

Faculty Members Teaching the Course	Signature
1. Mr. Kapil Gandhi	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4** **Semester: VII**

Course Name: Cloud Computing Lab **Course Code: KCS751A** **Course Coordinator Name: Dr. Ankur Bhardwaj**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs/ APOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Explain the various paradigm of cloud computing and computing techniques using AWS cloud.	PO1,PO2, PO3, PO4, PO5, PO-11, PO-12, PSO-1, PSO-2	Apply	Procedural
CO2	Articulate the concepts, key technologies, strength and limitation of cloud computing and possible application	PO1,PO2, PO3, PO4, PO5, PO7, PSO-1, PSO-2	Apply	Procedural
CO3	Articulate the concepts, key technologies, strength and limitation of cloud computing and possible application	PO1,PO2, PO3, PO4, PO5, PO-11	Apply	Procedural
CO4	Identify the architecture and infrastructure of cloud computing including SaaS, PaaS, Iaas, public cloud, private cloud and hybrid cloud.	PO1,PO2, PO3, PO4, PO5,PO7	Apply	Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Ankur Bhardwaj		5.	
2. Prof. Gaurav Parashar		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The theory courses/ project having credits 3 to 6 should have 5 number of COs. The laboratory course/ mini project/ seminar/ industrial training having credits less than 3 should have 3 number of COs. The Project having 7 to 12 credits should have 6 to 10 number of COs.
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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science and Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: IV** **Semester: 7th**
Course Name: Cloud Computing Lab **Course Code: KCS-751A** **Course Coordinator Name: Dr. Ankur Bhardwaj**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO/ APO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	2	2	3						1	1	3	3
CO2	3	2	2	2	2		1						2	1
CO3	3	3	2	2	2						1			
CO4	3	3	2	2	2		1							
PO Target	3	2.75	2	2	2.25	0	1				1	1	2.5	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Ankur Bhardwaj		5.	
2. Prof. Deepti Singh		6.	
3.		7.	
4.		8.	

Signature of Course Coordinator **Assoc./ Asst. Head DOC** **Signature of Addl. HoD** **Signature of HoD**

Please Note (Reference: OBE Guidelines wef. Session 2021 – 22)

- The strength of correlation between COs and POs/ PSOs/APOs should be represented as 1 (low correlation), 2 (medium correlation) and 3 (high correlation) in CO - PO/APO/PSO Matrix.
- If there is no correlation, then put a "-" (dash).