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.
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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**

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).

NIRF-2023
Engineering Rank Band (151-200)
Pharmacy Rank - 88
Innovation Rank Band (51-100)

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Department for Computer Science and Engineering

Program Name: B.Tech	**Academic Session:2024-25**	**Semester: IV**
Course Name: Engg. Math IV	**Course Code: BAS 403**	**Faculty Name: Dr. Neelam Sharma**

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	Solve partial differential equations by Lagrange, Charpit and other methods.	3	C&P
CO2	Apply the method of separation of variables to solve Wave, Heat and Laplace equation. Applications of Fourier transform.	3	C&P
CO3	Determine moments, correlation, linear regression lines and obtain best fitting curves to the given data.	3	C&P
CO4	Apply the concept of probability, Binomial, Poisson and Normal distribution.	3	C&P
CO5	Apply the theory of sampling to solve t-test, z-test, Chi-square test and control chart problems.	3	C&P

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
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	2	2	-	-	-	-	-	-	-	-	-	2	1	-
CO2	2	2	2	-	-	-	-	-	-	-	-	2	-	1
CO3	2	2	2	2	2	-	-	-	-	-	-	2	1	-
CO4	2	2	1	1	1	-	-	-	-	-	-	1	-	1
CO5	2	2	2	2	2	2	1	-	-	-	-	2	1	-
PO Target	**2**	**2**	**1.75**	**1.6**	**1.6**	**2**	**1**					**1.8**	**1**	**1**

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

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

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Department for Computer Science and Engineering

Program Name: B.Tech	**Academic Session: 2024-25**	**Semester: 4th**
Course name: Operating System	**Course Code: BCS401**	**Faculty Name: Dr. Swati Sharma, Dr. Neha Yadav, Dr. Parita Jain**

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			
CO 1	Understand the need, evolution and design issues of various categories of operating systems.	Understand	Factual, Conceptual
CO 2	Apply different CPU scheduling algorithms and deadlock handling methods.	Apply	Conceptual, Procedural
CO 3	Analyze various concurrency issues and different synchronization mechanisms in concurrent execution environment.	Analyze	Conceptual, Procedural
CO 4	Analyze various memory management techniques for efficient memory allocation.	Analyze	Conceptual, Procedural
CO 5	Apply different techniques of I/O management, Disk management, Disk scheduling and file system structure in operating systems.	Apply	Conceptual, Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Operating System (BCS401)														
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	2	1	1	1	1	-	-	-	-	-	2	3	1
CO2	3	3	3	3	3	1	-	-	-	-	-	2	2	1
CO3	3	3	2	3	3	2	-	-	-	-	-	2	2	1
CO4	3	3	2	3	3	2	-	-	-	-	-	2	2	1
CO5	3	3	2	2	2	2	-	-	-	-	-	2	2	2
PO Target	**3.00**	**2.80**	**2.00**	**2.40**	**2.40**	**1.60**						**2.00**	**2.25**	**1.2**

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

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

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- If there is no correlation, then put a "-" (dash).

Department for Computer Science and Engineering

Program Name: B. Tech	**Academic Session:2024-25**	**Semester: IV**
Course Name: Operating System Lab	**Course Code: BCS451**	**Faculty Name: Dr. Swati Sharma, Dr. Neha Yadav, Dr. Parita Jain**

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	Implement UNIX system calls for process management and file handling operations.	Apply	Conceptual, Procedural
CO2	Analyze CPU scheduling algorithms, resource utilization techniques, and process synchronization for optimized execution.	Analyze	Procedural
CO3	Implement memory and disk management techniques for efficient system performance.	Apply	Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Operating System Lab (BCS451)														
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	-	-	-	3	-	-	-	-	1	-	2	-	-
CO2	3	3	2	2	2	-	-	-	-	1	-	2	-	-
CO3	3	3	1	2	2	-	-	-	-	1	-	2	-	-
PO Target	3	3	1.5	2	2.3	-	-	-	-	1	-	2	-	-

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

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

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Department for Computer Science and Engineering

Program Name : B.Tech	**Academic Session : 2024-25**	**Semester: 4th/Even Semester**
Course name : Theory of Automata and Formal Languages	**Course Code: BCS402**	**Faculty : Mr. Vipin Deval and Ms. Shruti Agarwal**

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	**Understand** basic concepts of automata theory and formal languages.	**Understand**	**C, P**
CO2	**Construct** finite automata for regular expressions and regular languages.	**Apply**	**C, P**
CO3	**Illustrate** regular and context-free grammar for formal languages.	**Apply**	**C, P**
CO4	**Construct** the pushdown automata for context-free languages.	**Apply**	**C, P**
CO5	**Explore** Turing machines for formal languages.	**Analyze**	**Metacognitive**

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	2	-	-	-	-	-	-	-	-	-	-	1	2	-
CO-2	3	2	2	-	-	-	-	-	-	-	-	1	2	-
CO-3	3	2	1	-	-	-	-	-	-	-	-	1	2	-
CO-4	3	2	2	-	-	-	-	-	-	-	-	1	2	-
CO-5	3	3	2	-	-	-	-	-	-	-	-	1	2	-
PO Target	**2.8**	**2.25**	**1.75**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**-**

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

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

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Department for Computer Science and Engineering

Program Name : B.Tech	**Academic Session : 2024-25**	**Semester: IV**
Course name : OOPS with JAVA	**Course Code: BCS 403**	**Faculty : Dr. Seema Maitrey, Prof. Gagan Thakral, Prof. Pushpendra Tyagi, Prof. Mani Dwivedi**

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	Implement core Java concepts that model real world entities.	**Apply**	**Procedural**
CO2	Implement special features of Java like Exception Handling and Multithreading	**Apply**	**Procedural**
CO3	Develop Programs based on New Java features (JDK 8+).	**Apply**	**Procedural**
CO4	Apply a collection framework to build modular Java programs.	**Apply**	**Procedural**
CO5	Implement web and RESTful Web Services with Spring Boot using Spring Framework concepts	**Apply**	**Procedural**

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
OOPS with JAVA (BCS 403)														
CO-NO	**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**
CO-1	2	3	2	2	2	-	-	-	-	-	-	2	-	-
CO-2	2	3	2	2	2	-	-	-	-	-	-	2	2	2
CO-3	2	3	2	2	2	-	-	-	-	-	-	3	2	2
CO-4	2	2	2	2	3	-	-	-	-	-	2	3	2	2
CO-5	2	3	3	3	2	-	-	-	-	-	2	3	2	2
PO Target	2	2.8	2.2	2.25	2.2	-	-	-	-	-	2	2.6	2	2

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

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Department for Computer Science and Engineering

Program Name: B. Tech	Academic Session:2024-25	Semester: IV
Course Name: OOPS with JAVA Lab	Course Code: BCS-452	Faculty Name: Dr. Seema Maitrey, Prof. Pushpendra Tyagi, Prof. Mani Dwivedi, Prof. Gagan Thakral

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	Apply core JAVA OOPS concepts on an integrated development environment to solve real world problems.	Apply	Procedural
CO2	Apply Exception Handling and Multithreading JAVA features in problem solving.	Apply	Procedural
CO3	Use Collections and New Java features (JDK 8+) to solve problems in context of Java programming.	Apply	Procedural
CO4	Design RESTful Web Services with Spring Boot Test using Spring Framework concepts	Apply	Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
OOPS with JAVA Lab (BCS-452)														
CO-NO	**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	2	2	2	2	2	-	-	-	-	-	-	2	2	2
CO2	2	2	2	2	2	-	-	-	-	-	-	2	2	2
CO3	2	2	2	2	2	-	-	-	-	-	-	3	2	2
CO4	2	2	3	3	2	-	-	-	-	-	2	2	2	2
PO Target	2	2	2.75	2.75	2	-	-	-	-	-	2	2.75	2	2

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

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Department for Computer Science and Engineering

Program Name : B.Tech.	**Academic Session : 2024-25**	**Semester: 4th /Even Semester**
Course name : Cyber Security	**Course Code: BCC401**	**Faculty : Prof. Himanshi Chaudhary**

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	Understand the basic concepts and terminology of cyber security and cyber-crimes.	2	F/C
CO2	Understand the security issues and preventive measures in mobile communication.	2	F/C
CO3	Apply various cyber attacks along with the tools and methods used in cyber crime.	3	F/C
CO4	Analyze the concepts of cyber forensics and its implication in Social Networking websites.	4	F/C
CO5	Understand the cyber security policies and cyber laws.	2	F/C

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	2	1	-	1	-	2	-	2	-	2	-	2	2	-
CO-2	2	3	-	2	-	2	-	1	-	1	-	2	2	-
CO-3	2	3	-	2	3	2	-	1	-	1	-	2	2	-
CO-4	2	3	-	2	-	2	-	1	-	1	-	2	2	-
CO-5	2	1	-	-	-	2	-	3	1	3	-	2	2	-
PO Target	2	2.2	-	1.75	3	2	-	1.6	1	1.6	-	2	2	-

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

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

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- If there is no correlation, then put a "-" (dash).

Department for Computer Science and Engineering

Program Name : B.Tech.	**Academic Session : 2024-25**	**Semester: 4th /Even Semester**
Course name : Cyber Security Workshop	**Course Code: BCC453**	**Faculty : Prof. Himanshi Chaudhary**

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	Analyze network traffic patterns, protocols, and security threats using packet analysis tools such as Wireshark.	4	C,P
CO2	Identify suspicious activities, malwares, and potential security threats through the analysis and interpretation of network traffic.	4	C,P
CO3	Demonstrate knowledge of common web security vulnerabilities and their exploitation techniques.	4	C,P

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	2	3	-	1	1	1	-	1	-	1	-	1	2	-
CO-2	2	3	-	1	1	1	-	1	-	1	-	1	2	-
CO-3	2	3	-	2	1	1	-	1	-	1	-	1	2	-
PO Target	2	3	-	1.33	1	1	-	1	-	1	-	1	2	-

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

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Department for Computer Science and Engineering

Program Name: B.Tech.	**Academic Session: 2024-25**	**Semester: 4th/Even Semester**
Course name : Technical Communication	**Course Code: BAS-401**	**Faculty : Dr. Soniya Verma**

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	UNDERSTAND the nature and objective of Technical Communication relevant for the workplace as Engineers.	Understand	F,C
CO2	DEVELOP an understanding of key concepts of writing, designing and speaking.	Apply	C,P
CO3	UTILIZE the technical writing skills for the purposes of Technical Communication and its exposure in various dimensions.	Apply	C,P
CO4	BUILD UP interpersonal communication traits that will make the transition from institution to workplace smoother and help them to excel in their jobs.	Apply	C,P
CO5	APPLY technical communication to build their personal brand and handle crisis communication.	Apply	FC

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-PO-PSO Matrix														
Course Name (Course Code)														
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**
CO-1									3	3				
CO-2									3	3				
CO-3									3	3				
CO-4									3	3				
CO-5									3	3				
PO Target									**3**	**3**				

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

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

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Department for Computer Science and Engineering

Program Name : B.Tech.	**Academic Session : 2024-25**	**Semester: 6th/Even Semester**
Course name : Software Engineering	**Course Code: BCS 601**	**Faculty : Dr. Madhu Gautam**

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	Apply various software characteristics and software development models in software development.	Apply	Conceptual
CO2	Apply the contents of SRS to develop quality software, meeting the applicable standards.	Apply	Procedural
CO3	Analyze the different approaches to software design.	Analyze	Procedural
CO4	Apply testing strategy for software systems using methods like functional testing, test driven development and unit testing.	Apply	Procedural
CO5	Analyze various software management methods for development, maintenance, and analysis of software.	Analyze	Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix												
Course Name (Course Code)												
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**
CO-1	2	2	2	2	1					1	1	2
CO-2	2	3	3	3	2					2	3	2
CO-3	3	3	3	3	2					1	1	2
CO-4	3	3	3	3	2					1	2	2
CO-5	2	2	2	3	2					1	3	2
PO Target	2.2	2.8	2.6	2.6	2.2					1.6	2.4	2.2

Signature of Course Coordinator **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).

Department for Computer Science and Engineering

Program Name: B.Tech	**Academic Session : 2024-25**	**Semester: 6th/Even Semester**
Course name: Software Engineering Lab	**Course Code: BCS651**	**Faculty : Dr. Madhu Gautam**

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	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement	Understand, Analyze	Conceptual, Procedural
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.	Apply, Evaluate	Procedural
CO3	Draw a class diagram after identifying classes and association among them.	Analyze, Evaluate	Conceptual, Procedural
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.	Analyze, Evaluate	Conceptual, Procedural
CO5	Able to use modern engineering tools for specification, design, implementation and testing.	Apply, Analyze	Conceptual, Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	2	2	1	2	-	-	-	-	-	-	1	-	-	1
CO-2	2	2	1	2	-	-	-	-	-	-	1	-	-	1
CO-3	2	2	2	2	-	-	-	-	-	-	1	-	-	1
CO-4	2	2	2	2	-	-	-	-	-	-	1	-	-	1
CO-5	1	2	2	2	-	-	-	-	-	-	1	-	-	1
PO Target	1.8	2	1.6	2	-	-	-	-	-	-	**1**	-	-	**1**

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

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

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Department for Computer Science and Engineering

Program Name : B.Tech	**Academic Session : 2024-25**	**Semester: 6th/Even Semester**
Course name : Compiler Design	**Course Code: BCS602**	**Faculty : Dr.Pranay Meshram**

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 basic knowledge of phases and passes of the compiler.	**Apply**	Conceptual & Procedural
CO2	Illustrate Top-Down (LL) and Bottom-up parsers using the YACC tool.	**Analyze**	Conceptual, Procedural & Metacognitive
CO3	Apply syntax-directed translation method using synthesized and inherited attributes to generate intermediate code.	**Apply**	Conceptual & Procedural
CO4	Analyze data structures used for symbol table, runtime organization and errors in phases of compiler.	**Analyze**	Conceptual & Procedural
CO5	Apply code optimization and generation techniques for generating target code.	**Apply**	Conceptual & Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**	**PSO1**	**PSO2**
CO-1	3	2	1	1	-	-	-	-	-	-	-	2		
CO-2	3	3	3	2	3	-	-	-	-	-	-	1		
CO-3	3	2	2	1	-	-	-	-	-	-	-	1		
CO-4	3	2	1	2	-	-	-	-	-	-	-	2		
CO-5	3	2	2	3	-	-	-	-	-	-	-	2		
PO Target	**3**	**2.2**	**1.8**	**1.8**	**3**	-	-	-	-	-	-	**1.6**		

Signature of Course Coordinator **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).

Department of Computer Science and Engineering

Program Name : Btech	**Academic Session : 2024-25**	**Semester: 6th/Even Semester**
Course name : CD Lab	**Course Code: BCS652**	**Faculty : DR Pranay, Mr, Himan**

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	Implement the Lexical Analyzer using C language and LEX tool.	**Apply**	C,P
CO2	Experiment with the knowledge of different parsers (Operator precedence, shift reduce etc.) using C language.	**Apply**	C,P
CO3	Implement Intermediate code generation and optimization for various expressions.	**Apply**	C,P
CO4	Design a basic tool that showcase phase(s) of the compiler.	**Apply**	C,P

Mapping of Course outcomes with Program outcomes CO-POs Matrix

Course Name (Course Code)

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
CO-1	3	3	-	-	2	-	-	-	1	-	-	2	-	-
CO-2	3	3	-	-	-	-	-	-	1	-	-	2	-	-
CO-3	3	3	-	-	-	-	-	-	1	-	-	2	-	-
CO-4	3	3	1	2	-	-	-	-	2	-	1	2	3	-
PO Target	3	3	1	2	2	-	-	-	1.25	-	1	2	3	-

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

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

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- 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.

Department of Computer Science and Engineering

Program Name : BTech	**Academic Session : 2024-25**	**Semester: 6th/Even Semester**
Course name : Computer Networks	**Course Code: BCS 603**	**Faculty : Himanshi Chaudhary**

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	Apply the knowledge of networking concepts and functionality of physical layer.	Apply	C, P
CO2	Explore the concept of elementary data link layer protocol to build a robust network.	Apply	C, P
CO3	Analyze the concept of routing and IP addressing in network layer.	Analyze	C, P
CO4	Examine the usage and working of transport layer.	Analyze	C, P
CO5	Determine the performance of different protocols used at application layer.	Apply	C, P

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.

Department of Computer Science and Engineering

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	3	2	1	1	2	-	-	-	-	-	1	2	1	1
CO-2	3	3	1	1	1	-	-	-	-	-	1	2	2	2
CO-3	3	2	1	1	2	-	-	-	-	-	3	2	2	3
CO-4	3	3	1	1	2	1	-	-	-	-	1	2	3	3
CO-5	3	2	1	1	2	2	-	-	-	-	1	2	2	3
PO Target	3	2.4	1	1	1.8	1.5	-	-	-	-	1.4	2	2	2.4

Signature of Course Coordinator **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 for Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: 3rd** **Semester: 6th**

Course Name: Computer Networks Lab **Course Code: BCS 653** **Course Coordinator Name: Himanshi Chaudhary**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Understand the fundamental concepts of computer networking and Network topologies.	PO1, PO2, PO3, PO4, PO5,PO10,PO11,PO12, PSO1, PSO2	Understand	C, P
CO2	Analyze different types of network devices and simple computer networks.	PO1, PO2, PO3,PO4, PO5, PO8, PO9, PO11, PO12, PSO1, PSO2	Analyze	C, P
CO3	Implement the basic network commands and use techniques, skills, and modern networking tools necessary for engineering practice.	PO1, PO2,PO3, PO5,PO6, PO7, PO8, PO10,PO11, PO12, PSO1, PSO2	Analyze	C, P

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.			
2.			

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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.

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Program Name: B. Tech **Academic Session: 2024-25** **Year: 3rd** **Semester: 6th**

Course Name: Computer Networks Lab **Course Code: BCS 653** **Course Coordinator Name: Himanshi Chaudhary**

CO - PO/PSO/APO Matrix

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

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.			
2.			
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 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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Department for Computer Science and Engineering

Program Name: B. Tech **Academic Session: 2024-25** **Year: 3rd** **Semester: 6th**

Course Name: Big Data **Course Code: BCS061** **Course Coordinator Name: Ms. Bharti**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Demonstrate knowledge of Big Data Analytics concepts and its applications in business.	PO1, PO2, PO3, PO4, PO5,PO11,PO12, PSO1, PSO2	Understand	Factual
CO2	Demonstrate functions and components of Map Reduce Framework and HDFS.	PO1, PO2, PO3, PO4, PO5,PO11,PO12, PSO1, PSO2	Apply	Conceptual, Procedural
CO3	Discuss Data Management concepts in NoSQL environment.	PO1, PO2, PO3, PO4, PO5,PO11,PO12, PSO1, PSO2	Analyse	Conceptual & Procedural
CO4	Explain process of developing Map Reduce based distributed processing applications.	PO1, PO2, PO3, PO4, PO5,PO6,PO11,PO12, PSO1, PSO2	Analyse	Conceptual & Procedural
CO5	Explain process of developing applications using HBASE, Hive, Pig etc	PO1, PO2, PO3, PO4, PO5,PO6,PO11,PO12, PSO1, PSO2	Apply	Factual & Conceptual

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Bharti			
2. Mr. Gaurav Parashar			
3.			

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Program Name: B. Tech **Academic Session: 2024-25** **Year: 3rd** **Semester: 6th**

Course Name: Big Data **Course Code: BCS061** **Course Coordinator Name: Ms. Bharti**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO	
	1	1	1	2	3	-	-	-	-	1	-	1	3	1
CO1	2	3	3	3	3	-	-	-	-	1	-	2	3	2
CO2	1	3	3	3	3	-	-	-	-	1	1	2	3	2
CO3	1	1	3	3	3	-	-	-	-	1	2	2	3	2
CO4	1	1	2	3	3	-	-	-	-	1	2	2	3	2
CO5	**1.2**	**1.8**	**2.4**	**2.8**	**3**					**1**	**1.66**	**1.8**	**3**	**1.8**
PO Target	1	1	1	2	3	-	-	-	-	1	-	1	3	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Bharti			
2. Mr. Gaurav Parashar			
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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Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 3** **Semester: VI**
Course Name: Software Project Management **Course Code: BOE068** **Course Coordinator Name: Dr. D. Pandey**

Course Outcomes

After completion of the course, the student will be able to		Relevant POs/ PSOs	Revised Bloom's Level (BL)	Knowledge Category (KC)
CO No.	**Statement of Course Outcome**			
CO1	Determine the Cost benefit of the Projects with thorough understanding of project planning activities and the key phases of project management.	1,2,4,10,11,12	Apply	Procedural
CO2	Apply different software process models and cost estimation models for development of a project.	1,2,4,9,11,12	Apply	Procedural
CO3	Explore various project activities to compute critical path for risk analysis	1,2,4,9,11	Analyze	Procedural
CO4	Identify the different project contexts and suggest an appropriate management strategy	1,2,4,9,11	Analyze	Procedural
CO5	Adapt professional ethics in staff selection and professional concern in team building for successful software development.	3,4.8,9,10,12,14	Apply	Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof.Shivani		2. Prof. Shreela Pareek	
3. Prof. Shefali		4.	

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

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Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 3** **Semester: VI**
Course Name: Software Project Management **Course Code: BOE068** **Course Coordinator Name: Prof.Shivani**

CO - PO/PSO/APO Matrix

CO No.	Programme Outcome (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	2	-	2	-	-	-	-	-	2	3	2	-	-
CO2	1	2	-	2	-	-	-	-	3	-	3	2	-	-
CO3	2	2	-	2	-	-	-	-	2	-	3	-	-	-
CO4	2	2	-	2	-	-	-	-	3	-	3	-	-	-
CO5	-	-	1	1	-	-	-	2	3	2	-	2	-	2
PO Target	1.75	2	1	2.8	-	-	-	2	2.75	2	3	2	-	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr D. pandey		2. Prof. Saurabh Chandra	
3. Prof. Upendra Mishra		4.	

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

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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Department for Computer Science and Engineering

Program Name B.Tech	**Academic Session : 2024-25**	**Semester: 6th/Even Semester**
Course name : Essence of Indian Traditional Knowledge	**Course Code: BNC602**	**Faculty : Anshuman Kalia**

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	To understand the roots and details of Society State and Polity in India.	Understand	Factual and Conceptual
CO2	To understand the importance of Indian Literature, Culture, Tradition, Practices and to apply in present system.	Understand	Factual and Conceptual
CO3	To understand the Indian Religion, Philosophy, Practices and in shadow of Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy and to apply in present system .	Understand	Factual and Conceptual
CO4	To Understand the Science, Management and Indian Knowledge System and to apply in present system.	Understand	Factual and Conceptual
CO5	To Understand the Indian Architect, Engineering and Architecture in Ancient India, Indian's Cultural Contribution to the World and to create environment in Arts and Cultural for the present system.	Understand	Factual and Conceptual

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

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- 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.

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Mapping of Course outcomes with Program outcomes CO-POs Matrix												
Essence of Indian Traditional (BNC602)												
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**
CO-1	-	-	-	-	-	2	-	2	-	-	-	2
CO-2	-	-	-	-	-	2	-	2	-	-	-	2
CO-3	-	-	-	-	-	2	-	1	-	-	-	2
CO-4	1	-	-	-	-	2	2	-	-	-	-	2
CO-5	-	-	-	-	-	2	1	-	-	-	-	2
PO Target	**1**	**-**	**-**	**-**	**-**	**2**	**1.5**	**1.67**	**0**	**0**	**0**	**2**

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

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

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- If there is no correlation, then put a "-" (dash).

Department for Computer Science and Engineering

Program Name: B.Tech.	**Academic Session: 2024-25**	**Semester: 8th/Even**
Course Name: Rural development: Administration & Planning	**Course Code: KHU801**	**Faculty: Saurav Chandra**

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	Understand the basic concept of Rural Development.	Understand	Conceptual & Procedural
CO2	Understand the various experiments carried out prior to independence for Rural Development.	Understand	Conceptual & Procedural
CO3	Apply the procedures of rural administration through Panchayati Raj.	Apply	Conceptual & Procedural
CO4	Analyze the need for Human Resource for Rural Development.	Analyze	Conceptual & Procedural
CO5	Evaluate the need for Rural Industrialization and Entrepreneurship.	Evaluate	Conceptual & Procedural

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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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Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	-	-	-	-	-	2	2	1	-	-	1	2	-	-
CO-2	-	-	-	-	-	1	1	1	-	-	-	1	-	-
CO-3	-	-	-	-	-	1	1	2	-	-	-	1	-	-
CO-4	-	-	-	-	-	2	3	2	2	-	1	2	-	-
CO-5	-	-	-	-	-	2	3		2	-	1	2	-	-
PO Target	-	-	-	-	-	**1.6**	**2**	**1.2**	**2**	-	**1**	**1.6**	-	-

Signature of Course Coordinator **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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Department for Computer Science and Engineering

Program Name: B.Tech	**Academic Session: 2024-25**	**Semester: 8th/Even Semester**
Course name: Quality Management	**Course Code: KOE085**	**Faculty : Mr. Umang Rastogi/Mr. Gagan Thakral**

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	Understand the concepts of quality management system in order to managing a product quality.	Understand	CONCEPTUAL
CO2	Describe the effective organizational structure and the methods of managing the economic and the human aspects in controlling the quality of a product.	Understand	CONCEPTUAL
CO3	Demonstrate the application of Statistical Quality Control techniques in managing a product quality proactively.	Apply	CONCEPTUAL PROCEDURAL
CO4	Acquire various techniques for the evaluation and the improvement of reliability and maintainability as well as the motivational techniques (zero defects, quality circles) for the adaptability of a new quality control system.	Apply	CONCEPTUAL PROCEDURAL
CO5	Demonstrate the ISO 9000 Series, Taguchi method and JIT in improving a product quality.	Apply	CONCEPTUAL PROCEDURAL

Please Note (Reference: OBE Guidelines wef. Session 2023 – 24)

- 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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		Mapping of Course outcomes with Program outcomes CO-POs Matrix												
		Course Name (Course Code)												
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**
CO-1	3	2	-	-	1	-	-	-	-	-	2	-	-	1
CO-2	3	2	-	-	1	-	-	-	-	-	2	-	-	-
CO-3	3	2	-	-	1	-	-	-	-	-	2	-	-	2
CO-4	3	2	-	-	1	-	-	-	-	-	2	-	-	2
CO-5	3	2	-	-	1	-	-	-	-	-	1	-	-	1
PO Target	**3**	**2**	-	-	**1**	-	-	-	-	-	**1.8**	-	-	**1.5**

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

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

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NIRF-2023
Engineering Rank Band (151-200)
Pharmacy Rank - 88
Innovation Rank Band (51-100)

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Department for Computer Science and Engineering

Program Name: B.Tech **Academic Session: 2024-25** **Year: 4th** **Semester: VIII**
Course Name: DWDM **Course Code: KOE-093** **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	Able to demonstrate the Data warehouse architecture and its functionalities.	PO1, PO2, PO4, PO11, PSO1	**Understand**	**Conceptual**
CO2	Able to illustrate the various design methodologies of Data Warehouse	PO1, PO2, PO3, PO5, PO9, PO11, PSO1, PSO2	**Apply**	**Conceptual**
CO3	Able to apply the concept of preprocessing in data mining.	PO1, PO2, PO3, PO4, PO5, PSO1, PSO2	**Apply**	**Conceptual Procedural**
CO4	Able to compare different methodologies used in data mining like classification and clustering	PO1, PO2, PO3, PO4, PO5, PSO2	**Analyze**	**Conceptual Procedural**
CO5	Able to assess different approaches of data warehousing and data mining with various technologies.	PO1, PO2, PO4, PO5, PSO1, PSO2	**Evaluate**	**Conceptual Procedural**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr Ankur Bhardwaj		5.	
2.		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 2023 – 24)

- 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: VIII**

Course Name: DWDM **Course Code: KOE-093** **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	2	2	-	1	-	-	-	-	-	-	2	-	3	-
CO2	2	2	3	-	2	-	-	-	2	-	2	-	2	2
CO3	3	2	2	1	1	-	-	-	-	-	-	-	2	2
CO4	2	3	2	1	2	-	-	-	-	-	-	-	-	2
CO5	1	2	-	2	2	-	-	-	-	-	-	-	1	2
PO Target	2	2.2	2.33	1.25	1.75	-	-	-	2	-	2	-	2	2

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr Ankur Bhardwaj		5.	
2.		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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Department for Computer Science and Engineering

Program Name : B.Tech	**Academic Session : 2024-25**	**Semester: 8th/Even Semester**
Course name : Project	**Course Code: KCS852**	**Faculty : Ms. Bharti**

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	Identify socio technical problems and their feasibility.	**K3**	Conceptual
CO2	Apply a suitable software development model for the real world problem.	**K3**	Conceptual
CO3	Design engineering solutions to complex problems by utilizing a systematic approach.	**K6**	Metacognitive
CO4	Solve the real life problems by using various tools, techniques, and coding practices.	**K5**	Metacognitive
CO5	Take part in written and verbal communication with professionals and the community at large.	**K4**	Procedural
CO6	Analyze the stakeholder expectations to ensure successful project outcomes.	**K4**	Procedural

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KIET Group of Institutions, Delhi – NCR, Ghaziabad

Mapping of Course outcomes with Program outcomes CO-POs Matrix														
Course Name (Course Code)														
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**
CO-1	3	3	-	-	3	3	-	-	2	1	3	3	2	2
CO-2	3	3	3	3	3	-	-	-	2	-	2	3	-	3
CO-3	3	3	3	3	3	-	-	-	3	-	2	3	2	3
CO-4	3	3	3	3	3	2	2	2	2	-	2	3	1	3
CO-5	-	-	-	-	-	2	2	3	2	3	-	3	-	-
CO-6	2	-	-	-	3	2	-	3	2	-	3	2	2	2
PO Target	**2.80**	**3**	**3**	**3**	**3**	**2.25**	**2**	**2.67**	**2.17**	**2**	**2.40**	**2.83**	**1.75**	**2.60**

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

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