KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Data Structure **Course Code: BCS-301** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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 elementary concepts of Data Structures.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1, PSO2.	Apply	Conceptual & Procedural
CO2	Demonstrate the concepts of Linear Data structures to solve well-known. problems.	PO1, PO2, PO3, PO4, PO5, PO10, PO11,PO12,PSO1.	Apply	Conceptual & Procedural
CO3	Analyze the various searching and sorting techniques	PO1, PO2, PO3, PO4, PO5, PO10, PO11,PO12,PSO1.	Analyze	Conceptual & Procedural
CO4	Illustrate the representation of graphs and their applications	PO1, PO2, PO3, PO4, PO5, PO10, PO11,PO12,PSO1.	Apply	Conceptual & Procedural
CO5	Apply the concepts of Tree Data Structure.	PO1, PO2, PO3, PO4, PO5, PO10, PO11,PO12,PSO1.	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Mr. Naveen Chauhan	
2. Mr. Hriday Kumar Gupta	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Data Structure **Course Code: BCS-301** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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	2	-	-	-	-	2	2	3	1	-
CO2	3	3	3	2	2	-	-	-	-	2	2	3	1	-
CO3	3	3	3	2	2	-	-	-	-	2	2	3	2	-
CO4	3	3	3	3	3	-	-	-	-	2	3	3	1	-
CO5	3	3	3	2	3	-	-	-	-	2	2	3	1	-
PO Target	**3**	**3**	**2.8**	**2.2**	**2.4**	**-**	**-**	**-**	**-**	**2**	**2.2**	**3**	**1.2**	**-**

Faculty Members Teaching the Course	Signature
1. Mr. Naveen Chauhan	
2. Mr. Hriday Kumar Gupta	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Data Structure - LAB **Course Code: BCS-351** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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 various operations on Array, Linked List searching and sorting.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1	Evaluate	Conceptual & Procedural
CO2	Implement the concept of Stack and Queue using Array and LinkedList.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1	Analyze	Conceptual & Procedural
CO3	Implement the concept of Tree and Graph Data Structure using Array and LinkedList.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PO12, PSO1	Analyze	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Mr. Naveen Chauhan	
2. Mr. Hriday Kumar Gupta	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Data Structure - LAB **Course Code: BCS-351** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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	3	2	-	-	-	-	3	2	3	2	
CO2	3	2	2	2	3	-	-	-	-	3	3	2	3	
CO3	3	2	3	3	2	-	-	-	-	3	2	3	2	
PO Target	3	2.3	2.3	2.6	2.3	-	-	-	-	3	2.3	2.6	2.6	

Faculty Members Teaching the Course	Signature
1. Mr. Naveen Chauhan	
2. Mr. Hriday Kumar Gupta	
3.	
4.	

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:2023-2024** **Year: II** **Semester: III**
Course Name: S&I **Course Code:BOE-305** **Course Coordinator Name: Dr Rahat U Khan**

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 understand the use of sensors for measurement of displacement, force and pressure.	PO1, PO2, PO3, PO4, PO11, PSO1 PSO2	Understand	Conceptual & Procedural
CO2	Able to understand the uses of sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PSO1, PSO2	Understand	Conceptual & Procedural
CO3	Able to apply the concept of virtual instrumentation in automation industries.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	Apply	Factual & Procedural
CO4	Able to understand , Identify and use data acquisition methods.	PO1, PO2, PO3, PO4, PO5, PO6, PO5, PSO2	Understand	Conceptual & Procedural
CO5	Able to comprise intelligent instrumentation in industrial automation.	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	Understand	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr Rahat U Khan	
2.	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech. **Academic Session:**2023-2024 **Year:** II **Semester:** III
Course Name: S&I **Course Code:**BOE-305 **Course Coordinator Name:** Dr Rahat U Khan

CO - PO/PSO/APO Matrix (Subject Code: BOE-305)

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	-	-	-	3	-	2	2
CO5	2	2	2	2	2	2	-	-	-	-	2	-	2	2
PO Target	**2.60**	**2.40**	**2.00**	**2.40**	**2.25**	**2.67**	**2.00**	**0**	**0**	**0**	**2.40**	**0**	**2.20**	**2.00**

Faculty Members Teaching the Course	Signature
1. Dr Rahat U Khan	
2.	
3.	
4.	

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: 2023-2024** **Year: II** **Semester: III**
Course Name: HUV&PE **Course Code: BVE-301** **Course Coordinator Name: Dr Dilkeshwar Pandey**

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 significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society	PO6, PO7, PO8, PO9, PO12	Understand	Conceptual & Procedural
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.	PO6, PO7, PO8, PO9, PO12	Analyze	Conceptual & Procedural
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.	PO6, PO7, PO8, PO9, PO12	Understand	Conceptual & Procedural
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	PO6, PO7, PO8, PO9, PO12	Understand	Conceptual & Procedural
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	PO6, PO7, PO8, PO9, PO12	Analyze	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. DR Dilkeshwar Pandey	
2. Ms. Neha Yadav	
3. Ms. Bharti	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-2024** **Year: II** **Semester: III**
Course Name: HUV&PE **Course Code: BVE-301** **Course Coordinator Name: Dr Dilkeshwar Pandey**

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	3	2	-	-	3	-	-
CO2	-	-	-	-	-	2	1	3	2	-	-	3	-	-
CO3	-	-	-	-	-	2	1	3	2	-	-	3	-	-
CO4	-	-	-	-	-	2	3	3	2	-	-	3	-	-
CO5	-	-	-	-	-	2	3	3	2	-	-	3	-	-
PO Target	**-**	**-**	**-**	**-**	**-**	**2**	**1.8**	**3**	**2**	**-**	**-**	**3**	**-**	**-**

Faculty Members Teaching the Course	Signature
1. DR Dilkeshwar Pandey	
2. Ms. Neha Yadav	
3. Ms. Bharti	
4.	

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: 2023-24** **Year: II** **Semester: III**
Course Name: COA **Course Code: BCS-302** **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	Summarize the fundamental concepts of basic computer system organization.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Understand	Factual & Conceptual
CO2	Design ALU using arithmetic and logical microoperations.	PO1, PO2, PO3, PO4, PO5, PO10, PO12, PSO2	Create	Procedural
CO3	Analyse the working of instructions in control unit.	PO1, PO2, PO3, PO4, PO5, PO10,PO12, PSO2	Analyze	Conceptual & Procedural
CO4	Explore the concept of memory and its hierarchy.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Analyze	Conceptual & Procedural
CO5	Understand the different ways of communicating with I/O devices and standard I/O interfaces.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Understand	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra	
2. Dr. Swati Sharma	
3. Ms. Himanshi Chaudhary	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: COA **Course Code: BCS-302** **Course Coordinator Name: Ms. Himanshi Chaudhary**

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	-	-	-	-	-	-	2	-	2
CO2	3	2	3	1	1	-	-	-	-	1	-	2	-	2
CO3	2	2	2	1	1	-	-	-	-	1	-	2	-	2
CO4	2	2	2	1	1	-	-	-	-	-	-	2	-	2
CO5	1	2	2	1	1	-	-	-	-	-	-	2	-	2
PO Target	**2**	**2**	**2.2**	**1**	**1**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**-**	**2**

Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra	
2. Dr. Swati Sharma	
3. Ms. Himanshi Chaudhary	
4.	

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: 2023-24** **Year: II** **Semester: III**
Course Name: Discrete Structure and Theory of Logic **Course Code: BCS-303** **Course Coordinator Name: Mr. 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 discrete mathematical concepts and their properties.	PO1, PO2, PO12 & PSO1	Apply	Conceptual & Procedural
CO2	Explore the structures and properties of modern algebra.	PO1, PO2, PO12 & PSO1	Apply	Conceptual & Procedural
CO3	Validate any argument with the rules of propositional and predicate logic using the knowledge of modern algebra.	PO1, PO2, PO4, PO12, PSO1 & PSO2	Evaluate	Conceptual & Procedural
CO4	Explore the concepts of group theory and their applications	PO1, PO2, PO12 & PSO1	Apply	Conceptual & Procedural
CO5	Illustrate the principles of graph theory and combinatorics for solving problems related to computer science.	PO1, PO2, PO3, PO4, PO12, PSO1 & PSO2	Analyze	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Mr. Vipin Deval	
2. Mr. Pushpendra Kumar	
3. Ms. Bharti	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Discrete Structure and Theory of Logic **Course Code: BCS-303** **Course Coordinator Name: Mr. Vipin Deval**

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	3	-
CO2	2	1	-	-	-	-	-	-	-	-	-	1	3	-
CO3	3	1	-	3	-	-	-	-	-	-	-	2	3	3
CO4	3	2	-	-	-	-	-	-	-	-	-	1	3	-
CO5	3	2	2	2	-	-	-	-	-	-	-	2	3	2
PO Target	2.6	1.4	2	2.5	-	-	-	-	-	-	-	1.4	3	2.5

Faculty Members Teaching the Course	Signature
1. Mr. Vipin Deval	
2. Mr. Pushpendra Kumar	
3. Ms. Bharti	
4.	

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: 2023-24** **Year: II** **Semester: III**
Course Name: Python Programming **Course Code: BCC-302** **Course Coordinator Name: Prof. Gaurav Parashar**

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 Python fundamentals to solve complex problems	PO1,PO2,PO3,PO4,PO 5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO2	Apply Python control flow statements to solve real-world problems.	PO1,PO2,PO3,PO4,PO 5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO3	Apply lists, dictionaries, tuples and sets data structure to solve issues.	PO1,PO2,PO3,PO4,PO 5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO4	Apply file operations to implement solutions.	PO1,PO2,PO3,PO4,PO 5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO5	Apply Python GUI and common packages to design solutions.	PO1,PO2,PO3,PO4,PO 5,PO12,APO1,APO2	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Prof. Gaurav Parashar	
2. Dr Purnendu Shekhar Pandey	
3. Prof. Shalini Kapoor	
4.	

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: 2023-24** **Year: II** **Semester: III**
Course Name: Python Programming **Course Code: BCC-302** **Course Coordinator Name: Prof. Gaurav Parashar**

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	2	-	-	-	-	-	-	1	2	2
CO2	3	3	3	3	2	-	-	-	-	-	-	1	2	2
CO3	3	3	3	3	2	-	-	-	-	-	-	1	2	2
CO4	3	3	3	3	2	-	-	-	-	-	-	1	2	2
CO5	3	3	3	3	2	-	-	-	-	-	-	1	2	2
PO Target	**3**	**3**	**2.8**	**2.8**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**2**

Faculty Members Teaching the Course	Signature
1. Prof. Gaurav Parashar	
2. Dr Purnendu Shekhar Pandey	
3. Prof. Shalini Kapoor	
4.	

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: 2023-24** **Year: II** **Semester: III**
Course Name: Web Designing Workshop **Course Code: BCS-353** **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 integrating CSS to style it.	PO1,PO5, PO9, PO10, PO12,PSO1	Apply	Conceptual & Procedural
CO2	Apply the extensive customization options of Bootstrap frameworks to mark the appearance and style of website.	PO1, PO5, PO9, PO10, PO12,PS02	Apply	Conceptual & Procedural
CO3	Apply the JavaScript concept to validate the data of a web page on client-end.	PO1,PO5, PO9, PO10, PO12,PS01	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3. Prof. Vipin Deval	
4. Prof Pushpendra Kumar	
5. Prof. Shalini Kapoor	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: III**
Course Name: Web Designing Workshop **Course Code: BCS-353** **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	3	-	-	-	2	-	-	-	1	1	-	2	3	-
CO2	3	-	-	-	2	-	-	-	1	1	-	2	-	3
CO3	3	-	-	-	2	-	-	-	1	1	-	2	3	-
PO Target	3	-	-	-	2	-	-	-	1	1	-	2	3	3

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3. Prof. Vipin Deval	
4. Prof Pushpendra Kumar	
5. Prof. Shalini Kapoor	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year:** II **Semester:** III
Course Name: COA Lab **Course Code: BCS-352** **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	Construct half adder and full adder using basic logic gates, various code converters, Multiplexers and Decoders.	PO1, PO3, PO12, PO13	Apply	Conceptual & Procedural
CO2	Make use of excitation tables of various flip flops.	PO1, PO3, PO12, PO13	Apply	Conceptual & Procedural
CO3	Implement 8-bit Arithmetic Logical unit and 8-bit input output system with four bit internal registers.	PO1, PO2, PO3, PO12, PO13	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Ms. Himanshi Chaudhary	
2. Dr. Swati Sharma	
3. Mr. Upendra Mishra	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** 2023-24 **Year:** II **Semester:** III
Course Name: COA Lab **Course Code:** BCS-352 **Course Coordinator Name:** Ms. Himanshi Chaudhary

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	-	-	-	-	-	-	-	-	1	1	-
CO 2	2	-	1	-	-	-	-	-	-	-	-	1	1	-
CO 3	3	1	2	-	-	-	-	-	-	-	-	1	1	-
PO Target	2.33	1	1.33	-	-	-	-	-	-	-	-	1	1	-

Faculty Members Teaching the Course	Signature
1. Ms. Himanshi Chaudhary	
2. Dr. Swati Sharma	
3. Mr. Upendra Mishra	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: DBMS **Course Code: KCS-501** **Course Coordinator Name: Dr. Purnendu Shekhar Pandey**

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 the knowledge of database design methodology.	PO1, PO4, PO5, PO8, PO9, PO11, PO12, APO1	Apply	Conceptual & Procedural
CO2	Design an information model expressed in the form of ER diagram.	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12,APO2	Create	Conceptual & Procedural
CO3	Apply structured query language to handle the database.	PO1, PO2, PO4, PO5, PO8, PO9, PO10, PO11, PO12,APO2	Apply	Conceptual & Procedural
CO4	Analyze the redundancy problem in database tables using normalization.	PO1, PO2, PO4, PO11, PO12,APO2	Analyze	Conceptual & Procedural
CO5	Identify transaction issues and its solutions in database management system.	PO1, PO2, PO4, PO8, PO11, PO12,APO2	Analyze	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr Purnendu Shekhar Pandey	
2. Prof. Neha Yadav	
3. Dr. Preeti	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: III** **Semester: V**
Course Name: DBMS **Course Code: KCS-501** **Course Coordinator Name: Dr. Purnendu Shekhar Pandey**

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	-	-	1	1	-	1	2	2	-
CO2	3	2	3	2	3	-	-	1	1	2	1	1	-	3
CO3	3	2	-	2	3	-	-	1	1	1	1	1	-	2
CO4	2	3	-	3	-	-	-	-	-	-	1	1	-	2
CO5	2	3	-	3	-	-	-	1	-	-	1	1	-	2
PO Target	**2.6**	**2.5**	**3**	**2.4**	**2.67**	**-**	**-**	**1**	**1**	**1.5**	**1**	**1.2**	**2**	**2.25**

Faculty Members Teaching the Course	Signature
1. Dr Purnendu Shekhar Pandey	
2. Prof. Neha Yadav	
3. Dr. Preeti	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: Compiler Design **Course Code: KCS-502** **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	Acquire basic knowledge of phases and passes of the compiler.	PO1, PO5, PO9, PO11, PO12 / PSO1	Apply	Conceptual & Procedural
CO2	Design and implement Top-Down (LL) and Bottom-up parsers using the YACC tool.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12 / PSO2	Create	Conceptual, Procedural & Metacognitive
CO3	Apply syntax-directed translation method using synthesized and inherited attributes to generate intermediate code.	PO1, PO5, PO9, PO11,PO12 / PSO1	Apply	Conceptual & Procedural
CO4	Analyze data structures used for symbol table, runtime organization, and errors in compiler phases.	PO1, PO2, PO4, PO9, PO11, PO12 / PSO2	Analyze	Conceptual & Procedural
CO5	Apply code optimization and generation techniques for generating target code.	PO1, PO2, PO4, PO9, PO11, PO12 / PSO2	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Sushil Kumar	
2. Mr. Rahul Kumar Sharma	
3.	
4.	

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: Compiler Design **Course Code: KCS-502** **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	3	-	-	-	2	-	-	-	1	-	2	2	2	-
CO2	2	2	3	2	3	-	-	-	1	-	2	1	-	3
CO3	3	-	-	-	2	-	-	-	1	-	2	1	2	-
CO4	2	3	-	2	-	-	-	-	1	-	2	2	-	2
CO5	2	2	-	3	-	-	-	-	1	-	2	2	-	2
PO Target	**2.4**	**2.33**	**3**	**2.33**	**2.33**	**-**	**-**	**-**	**1**	**-**	**2**	**1.6**	**2**	**2.33**

Faculty Members Teaching the Course	Signature
1. Dr. Sushil Kumar	
2. Mr. Rahul Kumar Sharma	
3.	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: Design and Analysis of Algorithms **Course Code: KCS-503** **Course Coordinator Name: Dr. Sanjiv 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 running time of algorithms using asymptotic notations.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Analyze	C, P
CO2	Analyze advanced data structures algorithms.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Analyze	C, P
CO3	Create solutions of Optimization problems using Dynamic Programming or Greedy Approach.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Create	P, M
CO4	Design solutions of complex problems using the concept of backtracking and branch & bound.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Create	C, P, M
CO5	Examine the problems using the concepts of NP Completeness and finding suboptimal solutions using Randomized and Approximation Algorithms.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	Analyze	C, P, M

Faculty Members Teaching the Course	Signature
1. Dr. Vineet Sharma	
2. Dr. Sanjiv Sharma	
3. Ms. Shikha Jain	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: III** **Semester: V**
Course Name: Design and Analysis of Algorithms **Course Code: KCS-503** **Course Coordinator Name: Dr. Sanjiv 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	3	1	2	2	-	-	-	-	-	-	3	-	3
CO2	3	3	1	2	2	-	-	-	-	-	-	3	-	3
CO3	3	2	3	3	2	-	-	-	-	-	-	3	-	3
CO4	3	2	3	3	2	-	-	-	-	-	-	3	-	3
CO5	3	2	3	2	2	-	-	-	-	-	-	3	-	3
PO Target	**3**	**2.4**	**2.2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**3**

Faculty Members Teaching the Course	Signature
1. Dr. Vineet Sharma	
2. Dr. Sanjiv Sharma	
3. Ms. Shikha Jain	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: Data Analytics **Course Code: KCS-051** **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	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
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3.	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: Data Analytics **Course Code: KCS-051** **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
CO-1	2	-	-	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	-	-	-	-	3	-	2	2	-
PO Target	**2**	**2**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**1.5**	**-**	**2**	**1.8**	**-**

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3.	
4.	

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: 2023-24** **Year:** III **Semester:** Vth
Course Name: Machine Learning Techniques **Course Code:** KCS-055 **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 need for machine learning for problem-solving.	PO1,PO2,PO3,PO4,PO 12,PSO1	Understand	Conceptual
CO2	Apply machine learning techniques for solving different real-world problems.	PO1,PO2,PO3,PO4,PO 12,PSO1	Apply	Conceptual & Procedural
CO3	Apply Decision tree and instance-based learning in solving complex problems.	PO1,PO2,PO3,PO4,PO 12,PSO1	Apply	Conceptual & Procedural
CO4	Apply ANN and DL to complex engineering problems.	PO1,PO2,PO3,PO4,PO 12,PSO1	Apply	Conceptual & Procedural
CO5	Apply reinforcement learning and genetic algorithms to real-world applications.	PO1,PO2,PO3,PO4,PO 12,PSO1	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Mr. Umang Rastogi	
2. Mr. Gaurav Parashar	
3. Mr. Saurav Chandra	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** 2023-24 **Year:** III **Semester:** Vth
Course Name: Machine Learning Techniques **Course Code:** KCS-055 **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	3	3	2	2	-	-	-	-	-	-	-	1	2	-
CO2	3	3	3	3	-	-	-	-	-	-	-	1	2	-
CO3	3	3	3	3	-	-	-	-	-	-	-	1	2	-
CO4	3	3	3	3	-	-	-	-	-	-	-	1	2	-
CO5	3	3	3	3	-	-	-	-	-	-	-	1	2	-
PO Target	**3**	**3**	**2.8**	**2.8**	-	-	-	-	-	-	-	**1**	**2**	-

Faculty Members Teaching the Course	Signature
1. Mr. Umang Rastogi	
2. Mr. Gaurav Parashar	
3. Mr. Saurav Chandra	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: Constitution of India, Law & Engineering **Course Code: KNC-501** **Course Coordinator Name: Mr. Dharmendra 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 basic features and modalities about the Indian constitution.	PO6, PO7	Understand	Factual /Conceptual
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level	PO6, PO7,	Understand	Factual/ Conceptual
CO3	Understand the different aspects of the Indian Legal System and its related bodies.	PO6, PO7, PO8	Understand	Factual /Conceptual
CO4	Identify the different laws and regulations related to engineering practices.	PO6, PO7, PO8, PO10	Understand	Factual /Conceptual
CO5	Understand the role of engineers with different organizations and governance models	PO6, PO7, PO8, PO9, PO10, PO11, PO12	Understand	Factual /Conceptual

Faculty Members Teaching the Course	Signature
1. Mr. Dharmendra Kumar	
2. Mr. Saurav Chandra	
3.	
4.	

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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- 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 & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: III** **Semester: V**
Course Name: Constitution of India, Law & Engineering **Course Code: KNC-501** **Course Coordinator Name: Mr. Dharmendra 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	-	-	-	-	-	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
1. Mr. Dharmendra Kumar	
2. Mr. Saurav Chandra	
3.	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: DBMS Lab **Course Code: KCS-551** **Course Coordinator Name: Ms. 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	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 structured query language 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
1. Ms. Neha Yadav	
2. Dr. Preeti Garg	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: III** **Semester: V**
Course Name: DBMS Lab **Course Code: KCS-551** **Course Coordinator Name: Ms. 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
1. Ms. Neha Yadav	
2. Dr. Preeti Garg	
3.	
4.	

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: 2023-24** **Year: III** **Semester: V**
Course Name: CD Lab **Course Code: KCS-552** **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	Identify patterns, tokens & regular expressions for lexical analysis using C and LEX /YACC tools.	PO1, PO3, PO4, PO5, PO10, PO11, PO12, PSO1	Analyze	Conceptual & Procedural
CO2	Design and analyze top-down and bottom-up parsers.	PO1, PO5, PSO2	Create	Conceptual & Procedural
CO3	Analyze the intermediate code and machine code.	PO1, PO2, PO4, PSO2	Analyze	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Sushil Kumar	
2. Mr. Rahul Kumar Sharma	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: III** **Semester: V**
Course Name: CD Lab **Course Code: KCS-552** **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
CO 1	3	-	3	2	3	-	-	-	-	3	2	2	2	-
CO 2	3	-	-	-	3	-	-	-	-	-	-	-	-	2
CO 3	2	3	-	3	-	-	-	-	-	-	-	-	-	2
PO Target	2.66	3	3	2.5	3	-	-	-	-	3	2	2	2	2

Faculty Members Teaching the Course	Signature
1. Dr. Sushil Kumar	
2. Mr. Rahul Kumar Sharma	
3.	
4.	

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:** 2023-24 **Year:** IV **Semester:** VII
Course Name: PME **Course Code:** KHU-702 **Course Coordinator Name:** Ms. Shalini Kapoor

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 concept of Entrepreneurial Development program.	PO6, PO7, PO8, PO9, PO10, PO11, PO12	2	Conceptual
CO2	Understand the role of Innovation for sustainable business growth	PO6, PO7,PO8,PO9,PO10, PO11,PO12	2	Conceptual
CO3	Demonstrate the important steps involved in Project Management.	PO1, PO2,PO3,PO4,PO5,PO6, PO7,PO8,PO9,PO10, PO11,PO12	3	Apply
CO4	Analyze financial reports of projects.	PO1, PO2,PO3,PO4,PO5,PO6, PO7,PO8,PO9,PO10, PO11,PO12	4	Analyze
CO5	Analyze Social Sector Perspectives and Social Entrepreneurship.	PO1, PO2,PO3,PO4,PO5,PO6, PO7,PO8,PO9,PO10, PO11,PO12	4	Analyze

Faculty Members Teaching the Course	Signature
1. Ms. Shalini Kapoor	
2. Mr. Umang Rastogi	
3.	
4.	

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: 2023-24** **Year: IV** **Semester:** VII
Course Name: PME **Course Code: KHU-702** **Course Coordinator Name:** Ms. Shalini Kapoor

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	2	2	3	1		
CO2	-	-	-	-	-	2	2	3	3	2	3	2		
CO3	1	2	2	2	2	2	3	2	3	2	3	2		
CO4	1	2	2	2	2	2	3	2	3	2	3	2		
CO5	1	2	2	2	2	2	3	3	2	2	3	3		
PO Target	1	2	2	2	2	2	2.6	2.4	2.6	2	3	2		

Faculty Members Teaching the Course	Signature
1. Ms. Shalini Kapoor	
2. Mr. Umang Rastogi	
3.	
4.	

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: 2023-24** **Year: IV** **Semester: VII**
Course Name: Cryptography & Network Security **Course Code: KCS-074** **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	Understand	Conceptual & Procedural
CO2	Illustrate the 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	Understand	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Madhu Gautam	
2. Mr. Dharmendra Kumar	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: IV** **Semester: VII**
Course Name: Cryptography & Network Security **Course Code: KCS-074** **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. Dharmendra Kumar	
3.	
4.	

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: 2023-24** **Year: IV** **Semester: VII**
Course Name: Cloud Computing **Course Code: KCS-713** **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 knowledge of cloud, underlying principles and characteristics of cloud computing.	PO1, PO2, PO5, PO9, PO11, PO12	Understand	Conceptual & Procedural
CO2	Apply REST API and other tools in web services for cloud virtualization.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, CO11, PO12, PSO1,PSO2	Apply	Procedural
CO3	Create various types of cloud architecture and cloud storage.	PO1, PO2, PO3, PO5, PO9, PO10, PO12, PSO2	Create	Procedural
CO4	Analyze inter cloud resource management and security services.	PO1, PO2, PO4, PO9, PO12, PSO2	Analyze	Conceptual & Procedural
CO5	Analyze the concept of Map Reduce, Open stack, Google app engine and cloud federation stack using virtual box.	PO1, PO2, PO4, PO9, PO12, PSO2	Analyze	Conceptual & Procedural

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

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session:** **Year:** IV **Semester:** VII
Course Name: Cloud Computing **Course Code:** KCS-713 **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	-	-	2	-	-	-	1	-	1	2	-	-
CO2	2	2	3	2	2	-			1	3	2	1	2	2
CO3	3	2	3	-	2	-	-	-	1	1	-	1	-	3
CO4	2	3	-	2	-	-	-	-	2	-	-	1	-	2
CO5	2	3	-	3	-	-	-	-	1	-	-	1	-	2
PO Target	**2.6**	**2.4**	**3**	**2.33**	**2**	**-**	**-**	**-**	**1.2**	**2**	**1**	**1.20**	**2**	**2.20**

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

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: 2023-24** **Year: IV** **Semester: VII**
Course Name: Machine Learning **Course Code: KOE-073** **Course Coordinator Name: Dr. Parita Jain**

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 the concepts of Learning system, Problems, Task and the basic mathematics behind machine learning.	PO1, PO2, PO3, PO4, PO5, PO12, PSO1	Apply	Conceptual & Procedural
CO2	Explore the machine learning models and basic concepts of artificial neural network.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	Conceptual & Procedural
CO3	Illustrate the classification problems using learning models.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	Conceptual & Procedural
CO4	Infer computational learning using the hypothesis concepts.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1, PSO2	Analyze	Conceptual, Procedural, & Metacognitive
CO5	Classify the concepts of evolutionary and learning algorithms.	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Parita Jain	
2. Ms. Shivali Tyagi	
3.	
4.	

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year:** IV **Semester:** VII
Course Name: Machine Learning **Course Code: KOE-073** **Course Coordinator Name: Dr. Parita Jain**

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	3	3	-	-	-	-	-	-	3	2	-
CO2	3	3	2	3	3	2	-	-	-	-	-	3	3	-
CO3	3	3	3	3	3	2	-	-	-	-	-	3	3	-
CO4	3	3	3	3	3	2	-	-	-	-	-	3	3	2
CO5	3	3	3	3	3	2	-	-	-	-	-	3	3	-
PO Target	3	2.8	2.4	3	3	2						3	2.8	2

Faculty Members Teaching the Course	Signature
1. Dr. Parita Jain	
2. Ms. Shivali Tyagi	
3.	
4.	

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: 2023-24** **Year: 2nd** **Semester: IV**
Course Name: Math IV **Course Code: BAS 403** **Course Coordinator Name: Dr. Sonal Nirwal**

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	Solve partial differential equations using Lagrange, Charpit, and other particular methods.	1,2,12/1,2	Solve	Conceptual & Procedural
CO2	Apply the method of separation of variables to solve Wave, Heat and Laplace equation. Application of Fourier transform.	1,2,3,12/1,2	Apply	Conceptual & Procedural
CO3	Determine moments, correlation, and linear regression lines and obtain best-fitting curves to the given data.	1,2,3,4,5,12/1,2	Determine	Conceptual & Procedural
CO4	Apply the concept of probability to solve discrete and continuous probability problems.	1,2,3,4,5,12/1,2	Apply	Conceptual & Procedural
CO5	Apply the theory of sampling to solve t-test, z-test and Chi-square test problems.	1,2,3,4,5,6,7,12/1,2	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Neelam Sharma	
2. Dr. Ajay Dixit	
3. Dr Deepti Goel	
4. Dr. Sonal	

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.

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 2nd** **Semester: IV**
Course Name: Math IV **Course Code: BAS 403** **Course Coordinator Name: Dr. Sonal Nirwal**

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	-
CO2	2	2	2	-	-	-	-					2	-	1
CO3	2	2	2	2	2	-	-					2	1	1
CO4	2	2	1	1	1	-	-					1	-	1
CO5	2	1	2	2	2	2	2					2	1	-
PO Target	**2**	**1.8**	**1.75**	**1.6**	**1.6**	**2**	**2**					**1.8**	**1**	**1**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1.Dr. Neelam Sharma		5.	
3. Dr. Ajay Dixit		6.	
3.Dr Deepti Goel		7.	
4.Dr. Sonal		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 & Engineering

Program Name: CSE **Academic Session: 2023-24** **Year: II** **Semester: IV**
Course Name: Technical Communication **Course Code: BAS401** **Course Coordinator Name: Dr. Vipin 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 nature and objective of Technical Communication relevant for the workplace as Engineers.	PO-9, PO-10	**Understand**	C
CO2	DEVELOP an understanding of key concepts of writing, designing and speaking.	PO-9, PO-10	**Apply**	P
CO3	UTILIZE the technical writing skills for the purposes of Technical Communication and its exposure in various dimensions.	PO-9, PO-10	**Apply**	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.	PO-9, PO-10	**Apply**	C
CO5	APPLY technical communication to build their personal brand and handle crisis communication.	PO-9, PO-10	**Apply**	C

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Vipin Kumar			
2. Dr, Kavita Tiwari			

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.

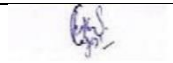
KIET Group of Institutions, Delhi – NCR, Ghaziabad

Department of Computer Science & Engineering

Program Name: B.Tech. **Academic Session: 2023-24** **Year: II** **Semester: IV**
Course Name: Technical Communication **Course Code: BAS401** **Course Coordinator Name: Dr. Vipin 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									3	3				
CO2									3	3				
CO3									3	3				
CO4									3	3				
CO5									3	3				
PO Target									**3**	**3**				

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Vipin Kumar			
2. Dr. Kavita Tiwari			

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: 2023-24** **Year: II** **Semester: IV**
Course Name: OS **Course Code: BCS 401** **Course Coordinator Name: Dr. Swati 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	Understand the structures of different operating systems and functions performed by modern operating system.	PO10, PSO1	Understand	Conceptual
CO2	Analyze software and hardware synchronization tools for solving critical section problems in concurrent processes.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PSO1	Analyze	Conceptual, Procedural
CO3	Apply multiple CPU scheduling algorithms.	PO1, PO2, PO3, PO5, PO10, PO11, PSO1	Apply	Procedural
CO4	Apply process management and memory management concepts to solve various hardware and software problems.	PO1, PO2, PO3, PO4, PO5, PO10, PO11, PSO1	Apply	Conceptual, Procedural
CO5	Understand various file management and security mechanisms techniques used in operating systems.	PO2, PO6, PO10, PO11, PSO1	Understand	Conceptual

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Swati Sharma		5.	
2. Dr. Parita Jain		6.	
3. Mr. Umang Rastogi		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.

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: IV**
Course Name: OS **Course Code: BCS 401** **Course Coordinator Name: Dr. Swati 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	-	-	-	-	-	-	-	-	-	2	-	-	1	-
CO2	3	2	2	2	2	-	-	-	-	2	1	-	1	-
CO3	3	2	2		2	-	-	-	-	2	1	-	1	-
CO4	3	2	2	1	2	-	-	-	-	2	1	-	1	-
CO5	-	1	-	-	-	1	-	-	-	2	1	-	1	-
PO Target	**3**	**1.75**	**2**	**1.5**	**2**	**1**	**-**	**-**	**-**	**2**	**1**	**-**	**1**	**-**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Swati Sharma		5.	
2. Dr. Parita Jain		6.	
3. Mr. Umang Rastogi		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).

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: IV**
Course Name: OS Lab **Course Code: BCS 451** **Course Coordinator Name: Dr. Swati 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	Compare and contrast among various CPU scheduling algorithms and apply knowledge to identify the best scheduling algorithm as per software requirement.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	Procedural
CO2	Apply the concept of process synchronization tool like semaphore to solve mutual exclusion problem in order to coordinate concurrent processes.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	Conceptual, Procedural
CO3	Apply the concepts of deadlock in operating systems to design and implement various deadlock avoidance algorithms like Banker's algorithm used in banking system.	PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Swati Sharma		5.	
2. Dr. Parita Jain		6.	
3. Mr. Umang Rastogi		7.	
4.Mr. Saurav Chandra		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: II** **Semester: IV**
Course Name: OS Lab **Course Code: BCS 451** **Course Coordinator Name: Dr. Swati 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
CO-1	3	2	2	2	2	-	-	-	2	1	1	1	2	2
CO-2	2	2	3	3	2	-	-	-	1	1	2	1	2	2
CO-3	3	3	2	3	2	-	-	-	1	1	1	1	2	2
PO Target	**2.6**	**2.3**	**2.3**	**2.6**	**2**	**-**	**-**	**-**	**1.3**	**1**	**1.3**	**1**	**2**	**2**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Swati Sharma		5.	
2. Dr. Parita Jain		6.	
3. Mr. Umang Rastogi		7.	
4. Mr. Saurav Chandra		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: 2023-24** **Year: II** **Semester: IV**
Course Name: Theory of Automata and Formal Languages **Course Code: BCS402** **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	**Understand** basic concepts of automata theory and formal languages.	PO1, PO12, and PSO1	Understand	Conceptual & Procedural
CO2	**Construct** finite automata for regular expressions and regular languages.	PO1, PO2, PO3, PO12, and PSO1	Apply	Conceptual & Procedural
CO3	**Illustrate** regular and context-free grammar for formal languages.	PO1, PO2, PO3, PO12, and PSO1	Apply	Conceptual & Procedural
CO4	**Construct** the pushdown automata for context-free languages.	PO1, PO2, PO3, PO12, and PSO1	Apply	Conceptual & Procedural
CO5	**Explore** Turing machines for formal languages.	PO1, PO2, PO3, PO12, and PSO1	Analyze	Metacognitive

Faculty Members Teaching the Course	Signature
1. Dr. Vineet Sharma	
2. Mr. Vipin Deval	
3. Mr. Rahul Sharma	

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 and Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: II** **Semester: IV**
Course Name: Theory of Automata and Formal Languages **Course Code: BCS402** **Course Coordinator Name: Vipin Deval**

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	-
CO2	3	2	2	-	-	-	-	-	-	-	-	1	2	-
CO3	3	2	1	-	-	-	-	-	-	-	-	1	2	-
CO4	3	2	2	-	-	-	-	-	-	-	-	1	2	-
CO5	3	3	2	-	-	-	-	-	-	-	-	1	2	-
PO Target	2.8	2.25	1.75	-	-	-	-	-	-	-	-	1	2	-

Faculty Members Teaching the Course	Signature
1. Dr. Vineet Sharma	
2. Mr. Vipin Deval	
3. Mr. Rahul Sharma	

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: 2023-24** **Year: II** **Semester: IV**
Course Name: OOPs **Course Code: BCS 403** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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 core java concepts that model real world entities.	PO2, PO3, PO4, PO5, PO12, PSO1.	Apply	Conceptual, Procedural
CO2	Build program based on new Java features (JDK 8+).	PO2, PO3, PO4, PO5,PO12, PSO1.	Apply	Conceptual, Procedural
CO3	Apply collection framework to build modular Java Programs.	PO2, PO3, PO4, PO5,PO12, PSO1.	Analyze	Conceptual, Procedural
CO4	Test Web and RESTful Web Services with Spring Boot using Spring Framework concepts.	PO3, PO5, PO11,PO12,PSO1.	Apply	Conceptual, Procedural
CO5	Implement the latest Java features based on real-time case studies.	PO2, PO3, PO4, PO5,PO12, PSO1.	Apply	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sanjiv Sharma- Section IVA		5.	
2. Mr. Pushpendra Tyagi- IVB		6.	
3. Mr. Hriday Kumar Gupta - IVC		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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- 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 & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: II** **Semester: IV**
Course Name: OOPs **Course Code: BCS 403** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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	2	
CO2	-	3	2	2	2	-	-	-	-	-	-	2	3	
CO3	-	3	2	2	2	-	-	-	-	-	-	3	3	
CO4	-	-	2	-	3	-	-	-	-	-	2	3	3	
CO5	-	3	3	3	2	-	-	-	-	-	2	3	3	-
PO Target		2.8	2.2	1.8	2.2	-	-	-	-	-	2.2	2.6	2.8	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sanjiv Sharma- Section IVA		5.	
2. Mr. Pushpendra Tyagi- IVB		6.	
3. Mr. Hriday Kumar Gupta - IVC		7.	
		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: 2023-24** **Year: II** **Semester: IV**

Course Name: OOPs Lab **Course Code: BCS 452** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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 core JAVA OOPS concepts on an integrated development environment to solve real world problems.	PO1 –PO5, PO12, PSO1-PSO2	Apply	Procedural
CO2	Apply Exception Handling and Multithreading JAVA features in problem solving.	PO1 –PO5, PO12, PSO1-PSO2	Apply	Procedural
CO3	Solve problems in context of programming code based on New Java features (JDK 8+).	PO1 –PO5, PO12, PSO1-PSO2	Apply	Procedural
CO4	Develop a solution for case study-based problem using JAVA Collection framework.	PO1 –PO5, PO11, PO12, PSO1-PSO2	Apply	Procedural
CO5	Design RESTful Web Services with Spring Boot Test using Spring Framework concepts	PO1 –PO5, PO11, PO12, PSO1-PSO2	Apply	Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sanjiv Sharma- Section IVA		5. Dr. Preeti Garg	
2. Mr. Pushpendra Tyagi- IVB		6. Mr. Gagan Thakral	
3. Mr. Hriday Kumar Gupta - IVC		7.	
4. Dr. Naveen Chauhan		8.	

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

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- 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: II** **Semester: IV**
Course Name: OOPS Lab **Course Code: BCS 452** **Course Coordinator Name: Mr. Hriday Kumar Gupta**

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	2	2	2	-	-	-	-	-	-	2	2	
CO-2	2	2	2	2	2	-	-	-	-	-	-	2	2	
CO-3	2	2	2	2	2	-	-	-	-	-	-	3	2	
CO-4	2	2	2	2	2	-	-	-	-	-	2	2	2	
CO-5	2	2	3	3	2	-	-	-	-	-	2	2	2	
PO Target	2	2	2.2	2.2	2	-	-	-	-	-	2	2.2	2	

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sanjiv Sharma- Section IVA		5. Dr. Preeti Garg	
2. Mr. Pushpendra Tyagi- IVB		6. Mr. Gagan Thakral	
3. Mr. Hriday Kumar Gupta - IVC		7.	
4. Dr. Naveen Chauhan		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 of Computer Science & Engineering

Program Name: **Academic Session:** 2023-24 **Year:** II **Semester:** IV
Course Name: Cyber Security **Course Code:** BCC 401 **Course Coordinator Name:** Shalini Kapoor

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 basic concepts of cyber security and cybercrimes.	PO1, PO6, PO7, PO8	2	Conceptual
CO2	Figure out different security challenges, trends, and their organizational implications specially in mobile computing era.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12	3	Conceptual/ Procedural
CO3	Apply the tools and methods used in cybercrime to identify and mitigate various threats.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12	3	Conceptual/ Procedural
CO4	Investigate digital evidences and security threats by using forensics principles, techniques, and approaches.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12	4	Conceptual/ Procedural
CO5	Acquire foundational knowledge of security policies, cyber laws, and intellectual property issues to apply legal frameworks in the digital domain	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12	4	Conceptual/ Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Shalini Kapoor		5.	
2. Mr. Dharmendra Kumar		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 of Computer Science & Engineering

Program Name: **Academic Session:** 2023-24 **Year:** II **Semester:** IV
Course Name: Cyber Security **Course Code:** BCC 401 **Course Coordinator Name:** Shalini Kapoor

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	2	-	-	-	-	-	-
CO2	3	3	1	2	3	3	3	3	-	-	-	3	1	1
CO3	3	3	1	2	3	3	3	3	-	-	-	1	1	1
CO4	3	3	1	2	3	3	3	3	-	-	-	1	1	1
CO5	3	2	1	2	2	3	3	3	-	-	-	1	1	-
PO Target	2.6	2.75	1	2	2.75	2.8	2.8	2.8	-	-	-	1.5	1	1

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Ms. Shalini Kapoor		3.	
2. Mr. Dharmendra Kumar		4.	

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:** 2023-24 **Year:** II **Semester:** IV

Course Name: Cyber Security Workshop **Course Code:** BCS453 **Course Coordinator Name:** Shalini kapoor

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 packet analysis using WireShark.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	3	C, P
CO2	Implement different Cyber- attacks using WireShark	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	3	C, P
CO3	Implement web security using DVWA	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	3	C, P

Faculty Members Teaching the Course	Signature
1. Dr. Shalini Kapoor	
2. Prof. Dharmender Kumar	

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:** 2023-24 **Year:** II **Semester:** IV

Course Name: Cyber Security Workshop **Course Code: B**CS453 **Course Coordinator Name:** Dr. Shalini Kapoor

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	3	2	2	1	3	-	-	-	-	-	-	3	-	3
CO2	3	2	2	1	3	-	-	-	-	-	-	2	-	3
CO3	3	2	2	1	3	-	-	-	-	-	-	3	-	3
PO Target	3	2	2	1	3	-	-	-	-	-	-	2.6	-	3

Faculty Members Teaching the Course	Signature
1. Dr. Shalini Kapoor	
2. Prof. Dharmender Kumar	

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: 2023-24** **Year: III** **Semester: VI**
Course Name: Software Engineering **Course Code: KCS 601** **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	Apply the concepts of software engineering to solve problems using generic models of software development process.	PO1, PO2, PO3, PO4,PO5, PO11, PSO2	Apply	Conceptual, Procedural
CO2	Analyze feasibility and requirements for solving problem and express it in terms of software requirement specification document.	PO1, PO2, PO3, PO4,PO11, PSO2	Analyze	Procedural
CO3	Design software-based system components of varying complexity that meet desired needs using design and development principles.	PO1, PO2, PO3, PO4,PO11, PSO2	Apply	Conceptual, Procedural
CO4	Illustrate testing of the developed software and evaluate it using automated software testing strategies.	PO1, PO2, PO3, PO4,PO11, PSO2	Apply	Conceptual, Procedural
CO5	Analyze the need of continuous software maintenance and development.	PO1, PO2, PO3, PO4,PO11, PSO2	Analyze	Conceptual, Procedural

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra		5.	
2. Dr. Preeti Garg		6.	
3. Ms. Neha Yadav		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.

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: VI**

Course Name: Software Engineering **Course Code: KCS 601** **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	2	-	-	-	-	-	-	1	-	-	1
CO2	2	2	1	2	-	-	-	-	-	-	1	-	-	1
CO3	2	2	2	2	-	-	-	-	-	-	1	-	-	1
CO4	2	2	2	2	-	-	-	-	-	-	1	-	-	1
CO5	1	2	2	2	-	-	-	-	-	-	1	-	-	1
PO Target	1.8	2	1.6	2	-	-	-	-	-	-	**1**	-	-	**1**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Mr. Upendra Mishra		5.	
2. Dr. Preeti Garg		6.	
3. Ms. Neha Yadav		7.	
4.		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: 2023-24** **Year: III** **Semester: VI**
Course Name: Software Engineering Lab **Course Code: KCS651** **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	Discover ambiguities, inconsistencies and incompleteness in SRS document and to identify its functional and non-functional requirements.	PO1, PO2, PO3, PO4, PO5, PO9, PO9, PO10,PO11,PSO1	Analyze	F,P
CO2	Demonstrate Use Case diagrams, class diagram and other UML diagram through a problem statement.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PSO1	Analyze	C, P
CO3	Articulate the use of modern engineering tools for software design and testing.	PO1, PO2, PO3, PO4, PO5, PO9, PO11, PSO1	Analyze	C,P

Faculty Members Teaching the Course	Signature
1. Prof Upendra Mishra	
2. Prof. Preeti Grag	
3. Prof. Neha Yadav	

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:** VI
Course Name: Software Engineering lab **Course Code:** KCS651 **Course Coordinator Name:** Prof. 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	2		-	-	1	1	2	1		3	
CO2	1	2	2	2	2		-		1	2	1		3	
CO3	2	2	2	3	2					1	1		3	
PO Target	1.67	2	1.67	2.34	2	0	0	1	1	2	1	1.0	3	0

Faculty Members Teaching the Course	Signature
1. Prof. Upendra Mishra	
2. Prof. Preeti Garg	
3. Prof. Neha Yadav	

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 of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: VI**
Course Name: Web Technology **Course Code: KCS602** **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	Demonstrate Java programs for window-based applications.	PO1, PO2, PO3, PO4, PO5, PO 11, PO12	Apply	Conceptual, Procedural
CO2	Illustrate static, interactive web pages using HTML, CSS and XML.	PO1, PO3, PO4, PO5, PO9, PO12	Analyze	Conceptual, Procedural
CO3	Apply JavaScript, AJAX and socket programming for client-server applications.	PO1, PO2, PO3, PO4, PO5, PO 11, PO12	Analyze	Conceptual, Procedural
CO4	Develop enterprise level applications and manipulate database using JDBC.	PO1, PO2, PO3, PO4, PO5, PO 11, PO12, PSO2	Create	Conceptual, Procedural
CO5	Design interactive web applications using Servlets and JSP.	PO1, PO2, PO3, PO4, PO5, PO 11, PO12, PSO2	Create	Conceptual, Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3. Prof. Pushpendra Tyagi	

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:** 2023-24 **Year:** III **Semester:** VI
Course Name: Web Technology **Course Code:** KCS602 **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	2	2	3	3	3	-	-	-	-	-	2	2		
CO2	2	-	2	2	3	-	-	-	2	-	-	2		
CO3	2	2	3	3	3	-	-	-	-	-	2	2		
CO4	3	3	3	3	3	3	-	-	-	-	-	3		1
CO5	3	2	3	2	3	-	-	-	-	-	2	2		1
PO Target	2.4	2.2	2.8	2.6	3.0	3.0	0	0	2.0	0	2.0	2.2		1

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3. Prof. Pushpendra Tyagi	

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:** 2023-24 **Year:** III **Semester:** VI

Course Name: Web Technology Lab **Course Code:** KCS652 **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 HTML, CSS, and java script to construct static/dynamic web pages.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	3	C, P
CO2	Apply Java Beans and Java to database connectivity using MySQL	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	3	C, P
CO3	Design dynamic- server-side applications using Servlet, JSP and maintaining the session using session tracking mechanism.	PO1, PO2, PO3, PO4, PO5, PO12, PSO2	6	C, P

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3. Prof. Pushpendra Tyagi	

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:** 2023-24 **Year:** III **Semester:** VI

Course Name: Web Technology Lab **Course Code:** KCS652 **Course Coordinator Name:** Dr. Seema Maitrey

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	3	3	3	3	3	-	-	-	-	-	-	3	-	3
CO2	3	3	3	-	3	-	-	-	-	-	-	2	-	3
CO3	3	3	3	-	3	-	-	-	-	-	-	3	-	3
PO Target	3	3	3	3	3	-	-	-	-	-	-	2.6	-	3

Faculty Members Teaching the Course	Signature
1. Dr. Seema Maitrey	
2. Prof. Gagan Thakral	
3. Prof. Pushpendra Tyagi	

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: 2023-24** **Year: III** **Semester: VI**
Course Name: Computer Networks **Course Code: KCS603** **Course Coordinator Name: Dr. Naveen Chauhan**

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 networking concepts and functionality of physical layer.	PO1, PO2, PO3, PO4, PO5, PO11, PO12	Apply	Conceptual & Procedural
CO2	Explore the concept of elementary data link layer protocol to build a robust network.	PO1, PO2, PO3, PO4, PO5, PO11, PO12	Apply	Conceptual, Procedural, & Metacognitive
CO3	Analyze the concept of routing and IP addressing in network layer.	PO1, PO2, PO3, PO4, PO5, PO11, PO12	Analyze	Factual, Conceptual, & Procedural
CO4	Examine the usage and working of transport layer.	PO1, PO2, PO3, PO4, PO5, PO6, PO11, PO12, PSO2	Analyze	Conceptual & Procedural
CO5	Determine the performance of different protocols used at application layer.	PO1, PO2, PO3, PO4, PO5, PO6, PO11, PO12, PSO2	Apply	Conceptual & Procedural

Faculty Members Teaching the Course	Signature
1. Dr. Naveen Chauhan	
2. Prof. Himanshi Chaudhary	
3. Prof. Manish Kumar	

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

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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 & Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** III **Semester:** VI
Course Name: Computer Networks **Course Code:** KCS603 **Course Coordinator Name:** Dr. Naveen Chauhan

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	2	-	-
CO2	3	3	1	1	1	-	-	-	-	-	1	2	-	-
CO3	3	2	1	1	2	-	-	-	-	-	1	2	-	-
CO4	3	3	1	1	2	1	-	-	-	-	3	2	-	1
CO5	3	2	1	1	2	2	-	-	-	-	1	2	-	1
PO Target	3	2.4	1	1	1.8	1.5	0	0	0	0	1.4	2	0	1

Faculty Members Teaching the Course	Signature
1. Dr. Naveen Chauhan	
2. Prof. Himanshi Chaudhary	
3. Prof. Manish Kumar	

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: 2023-24** **Year: III** **Semester: VI**
Course Name: Computer Networks Lab **Course Code: KCS653** **Course Coordinator Name: Dr. Naveen Chauhan**

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 fundamental concepts of computernetworking and Network topologies.	PO1, PO2, PO3, PO4, PO5, PO11, PO12, PSO2	Analyze	F, C
CO2	Analyze different types of network devices and simple computer networks.	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO11, PO12, PSO2	Analyze	C, P
CO3	Implement the basic network commands and use techniques, skills, and modern networking toolsnecessary for engineering practice.	PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO10, PO11, PO12, PSO2	Analyze	C, F

Faculty Members Teaching the Course	Signature
1. Dr. Naveen Chauhan	
2. Prof. Himanshi Chaudhary	
3. Prof. Manish Kumar	

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

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Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session:** 2023-24 **Year:** III **Semester:** VI
Course Name: Computer Networks lab **Course Code:** KCS653 **Course Coordinator Name:** Dr. Naveen Chauhan

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	1	2	2	-	-	-	-	2	1	2	-	1
CO2	1	2	2	2	1	-	-	2	1	-	1	2	-	2
CO3	1	2	2	-	2	2	1	2		2	1	1	-	2
PO Target	1	1.6	1.6	2	1.6	2	1	2	1	2	1	1.6	0	1.66

Faculty Members Teaching the Course	Signature
1. Dr. Naveen Chauhan	
2. Prof. Himanshi Chaudhary	
3. Prof. Manish Kumar	

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:** **Year: III** **Semester: 6th**
Course Name: Big Data **Course Code: KCS-061** **Course Coordinator Name: Prof. Bharti**

Course Outcomes

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

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Bharti		5.	
2. Dr Madhu Gautam		6.	
3. Prof. Gaurav Parashar		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 of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: III** **Semester: VI**
Course Name: Software Project Management **Course Code: KOE-068** **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	Exercise the project planning activities and the key phases of project management.	PO1, PO2, PO3, PO4, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	Procedural
CO2	Apply different software process models and cost estimation models for development of a project.	PO1, PO2, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2	Apply	Conceptual
CO3	Explore various project activities to compute critical path for risk analysis.	PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	Procedural
CO4	Identify the different project contexts and suggest an appropriate management strategy.	PO1, PO2, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2	Analyze	Procedural
CO5	Adapt professional ethics in staff selection and professional concern in team building for successful software development.	PO1, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Apply	Conceptual

Faculty Members Teaching the Course	Signature
1. Dr. Shalini Kapoor	
2. Ms. Deepti Singh	

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: 2023-24** **Year: III** **Semester: 6th**
Course Name: Software Project Management **Course Code: KOE068** **Course Coordinator Name: Prof. 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	-	2	-	-	2	3	2	2	2	2
CO2	2	3	-	-	2	2	-	-	2	-	2	2	2	2
CO3	3	3	3	3	3	2	-	-	2	2	3	2	2	2
CO4	2	2	-	2	2	2	-	-	2	2	2	2	2	2
CO5	1	-	-	-	-	3	2	3	3	3	2	2	2	2
PO Target	**2.20**	**2.75**	**2.50**	**2.00**	**2.33**	**2.20**	**2.00**	**3.00**	**2.20**	**2.50**	**2.20**	**2.00**	**2.00**	**2.00**

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Prof. Deepti		3	
2. Dr Shalini Kapoor		4	

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: 2023-24** **Year: III** **Semester: VI**
Course Name: ITCS **Course Code: KNC 602** **Course Coordinator Name: Dr. Dilkeshwar Pandey**

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 roots and details of Society State and Polity in India.	PO6, PO12	Understand	Factual and Conceptual
CO2	To understand the importance of Indian Literature, Culture, Tradition, Practices and to apply in present system.	PO6, PO7, PO12	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.	PO6, PO12	Understand	Factual and Conceptual
CO4	To Understand the Science, Management and Indian Knowledge System and to apply in present system.	PO1, PO6, PO11, PO12	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.	PO6, PO7, PO12	Understand	Factual and Conceptual

Faculty Members Teaching the Course	Signature
1. Dr Dilkeshwar Pandey	
2. Ms. Neha Yadav	
3. Mr. Manish Maurya	

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: 2023-24** **Year: III** **Semester: VI**
Course Name: ITCS **Course Code: KNC 602** **Course Coordinator Name: Dr. Dilkeshwar Pandey**

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	-	-
CO2	-	-	-	-	-	2	2	-	-	-	-	2	-	-
CO3	-	-	-	-	-	2	-	-	-	-	-	2	-	-
CO4	1	-	-	-	-	2	-	-	-	-	2	3	-	-
CO5	-	-	-	-	-	2	2	-	-	-	-	3	-	-
PO Target	-	-	-	-	-	2	-	-	-	-	-	2	-	-

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr Dilkeshwar Pandey		5.	
2. Ms. Neha Yadav		6.	
3. Mr. Manish Maurya		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.

Department of Computer Science & Engineering

Program Name: B.Tech **Academic Session: 2023-24** **Year: 4th** **Semester: VIII**

Course Name: RDAP **Course Code: KHU801** **Course Coordinator Name: 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	Understand the basic concept of Rural Development.	PO-6, PO-7, PO-8, PO-11, PO-12	**Understand**	**Conceptual**
CO2	Know the various experiments carried out prior to independence for Rural Development.	PO-6, PO-7, PO-8, PO-12	**Understand**	**Conceptual**
CO3	Understand the structure of rural administration through Panchayati Raj.	PO-6, PO-7, PO-8, PO-12	**Understand**	**Conceptual**
CO4	Infer the need for Human Resource for Rural Development.	PO-6, PO-7, PO-8, PO-9, PO-11, PO-12	**Understand**	**Conceptual**
CO5	Understand the need for Rural Industrialization and Entrepreneurship.	PO-6, PO-7, PO-8, PO-9, PO-11, PO-12	**Understand**	**Conceptual**

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

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).

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: 4th** **Semester: VIII**

Course Name: RDAP **Course Code: KHU801** **Course Coordinator Name: 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	---	---	---	---	---	2	2	2	---	---	1	2	---	---
CO2	---	---	---	---	---	1	1	1	---	---	---	1	---	---
CO3	---	---	---	---	---	1	1	1	---	---	---	1	---	---
CO4	---	---	---	---	---	2	3	2	2	---	1	2	---	---
CO5	---	---	---	---	---	2	3	2	2	---	1	2	---	---
PO Target	---	---	---	---	---	**1.6**	**2**	1.6	2	---	1	**1.6**	---	---

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

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.

Department of Computer Science & Engineering

Program Name: B. Tech **Academic Session: 2023-24** **Year: IV** **Semester: VIII**
Course Name: Quality Management **Course Code: KOE-085** **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	Understand the concepts of quality management system in order to managing a product quality.	PO1, PO2, PO5, PO11	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.	PO1, PO2, PO5, PO11	Understand	CONCEPTUAL
CO3	Demonstrate the application of Statistical Quality Control techniques in managing a product quality proactively.	PO1, PO2, PO5, PO11	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.	PO1, PO2, PO5, PO11	Apply	CONCEPTUAL PROCEDURAL
CO5	Demonstrate the ISO 9000 Series, Taguchi method and JIT in improving a product quality.	PO1, PO2, PO5, PO11	Apply	CONCEPTUAL PROCEDURAL

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sushil Kumar		3.	
2. Mr. Umang Rastogi		4.	

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: 2023-24** **Year: IV** **Semester: VIII**
Course Name: Quality Management **Course Code: KOE-085** **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	3	2	-	-	1	-	-	-	-	-	2	-	-	1
CO2	3	2	-	-	1	-	-	-	-	-	2	-	-	-
CO3	3	2	-	-	1	-	-	-	-	-	2	-	-	2
CO4	3	2	-	-	1	-	-	-	-	-	2	-	-	2
CO5	3	2	-	-	1	-	-	-	-	-	1	-	-	1
PO Target	3	2	-	-	1	-	-	-	-	-	1.8	-	-	1.5

Faculty Members Teaching the Course	Signature	Faculty Members Teaching the Course	Signature
1. Dr. Sushil Kumar		3.	
2. Mr. Umang Rastogi		4.	

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: 2023-24** **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. Prof. Karnika Dwivedi		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: 2023-24** **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. Prof. Karnika Dwivedi		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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