

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Data Structure

Academic Session: 2023-24  
Course Code: BCS-301

Year: II  
Semester: III  
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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Data Structure

Academic Session: 2023-24  
Course Code: BCS-301

Year:II  
Course Coordinator Name: Mr. Hriday Kumar Gupta

Semester: III

### 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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Data Structure - LAB

Academic Session: 2023-24  
Course Code: BCS-351

Year: II  
Semester: III  
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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Data Structure - LAB

Academic Session: 2023-24  
Course Code: BCS-351

Year: II  
Semester: III  
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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech.  
Course Name: S&I

Academic Session:2023-2024  
Course Code:BOE-305

Year: II  
Semester: III  
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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech.  
Course Name: S&I

Academic Session:2023-2024  
Course Code:BOE-305

Year: II  
Semester: III  
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	1 2	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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

**Program Name: B. Tech**  
**Course Name: HUV&PE**

**Academic Session: 2023-2024**  
**Course Code: BVE-301**

**Year: II**  
**Course Coordinator Name: Dr Dilkeshwar Pandey**

**Semester: III**

### 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**

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## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: HUV&PE

Academic Session: 2023-2024  
Course Code: BVE-301

Year: II Semester: III  
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	1 2	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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

**Program Name: B. Tech**  
**Course Name: COA**

**Academic Session: 2023-24**  
**Course Code: BCS-302**

**Year: II**  
**Course Coordinator Name: Ms. Himanshi Chaudhary**

**Semester: III**

### 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**

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: COA

Academic Session: 2023-24  
Course Code: BCS-302

Year: II Semester: III  
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

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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

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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

### 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

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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: 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,PO5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO2	Apply Python control flow statements to solve real-world problems.	PO1,PO2,PO3,PO4,PO5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO3	Apply lists, dictionaries, tuples and sets data structure to solve issues.	PO1,PO2,PO3,PO4,PO5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO4	Apply file operations to implement solutions.	PO1,PO2,PO3,PO4,PO5,PO12,APO1,APO2	Apply	Conceptual & Procedural
CO5	Apply Python GUI and common packages to design solutions.	PO1,PO2,PO3,PO4,PO5,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

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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: 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

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

**Program Name: B. Tech**  
**Course Name: Web Designing Workshop**

**Academic Session: 2023-24**  
**Course Code: BCS-353**

**Year: II**  
**Course Coordinator Name: Dr. Seema Maitrey**

**Semester: III**

### 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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Web Designing Workshop

Academic Session: 2023-24  
Course Code: BCS-353

Year: II  
Semester: III  
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)**

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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.



# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

**Program Name: B. Tech**  
**Course Name: COA Lab**

**Academic Session: 2023-24**  
**Course Code: BCS-352**

**Year: II**  
**Course Coordinator Name: Ms. Himanshi Chaudhary**

**Semester: III**

### 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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: COA Lab

Academic Session: 2023-24  
Course Code: BCS-352

Year: II  
Semester: III  
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  
Course Name: DBMS

Academic Session: 2023-24  
Course Code: KCS-501

Year: III  
Semester: V  
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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: DBMS

Academic Session: 2023-24  
Course Code: KCS-501

Year: III  
Semester: V  
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
C01	3	-	-	2	2	-	-	1	1	-	1	2	2	-
C02	3	2	3	2	3	-	-	1	1	2	1	1	-	3
C03	3	2	-	2	3	-	-	1	1	1	1	1	-	2
C04	2	3	-	3	-	-	-	-	-	-	1	1	-	2
C05	2	3	-	3	-	-	-	1	-	-	1	1	-	2
<b>PO Target</b>	<b>2.6</b>	<b>2.5</b>	<b>3</b>	<b>2.4</b>	<b>2.67</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>1.5</b>	<b>1</b>	<b>1.2</b>	<b>2</b>	<b>2.25</b>

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.
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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Compiler Design

Academic Session: 2023-24  
Course Code: KCS-502

Year: III  
Semester: V  
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)**

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Compiler Design

Academic Session: 2023-24  
Course Code: KCS-502

Year: III  
Semester: V  
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

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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)**

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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

### 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  
Course Name: Data Analytics

Academic Session: 2023-24  
Course Code: KCS-051

Year: III  
Semester: V  
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)**

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

**Program Name: B. Tech**  
**Course Name: Data Analytics**

**Academic Session: 2023-24**  
**Course Code: KCS-051**

**Year: III**  
**Course Coordinator Name: Dr. Seema Maitrey**

**Semester: V**

### 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)**

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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,PO12,PSO1	Understand	Conceptual
CO2	Apply machine learning techniques for solving different real-world problems.	PO1,PO2,PO3,PO4,PO12,PSO1	Apply	Conceptual & Procedural
CO3	Apply Decision tree and instance-based learning in solving complex problems.	PO1,PO2,PO3,PO4,PO12,PSO1	Apply	Conceptual & Procedural
CO4	Apply ANN and DL to complex engineering problems.	PO1,PO2,PO3,PO4,PO12,PSO1	Apply	Conceptual & Procedural
CO5	Apply reinforcement learning and genetic algorithms to real-world applications.	PO1,PO2,PO3,PO4,PO12,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)**

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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

### 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)**

- ❖ 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: 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  
Course Name: DBMS Lab

Academic Session: 2023-24  
Course Code: KCS-551

Year: III  
Semester: V  
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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: DBMS Lab

Academic Session: 2023-24  
Course Code: KCS-551

Year: III  
Semester: V  
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  
Course Name: CD Lab

Academic Session: 2023-24  
Course Code: KCS-552

Year: III  
Semester: V  
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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: CD Lab

Academic Session: 2023-24  
Course Code: KCS-552

Year: III  
Semester: V  
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)

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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.

# 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	1 2	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)

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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: 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.

# 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

### 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  
Course Name: Cloud Computing

Academic Session: 2023-24  
Course Code: KCS-713

Year: IV  
Semester: VII  
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.

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Cloud Computing

Academic Session:  
Course Code: KCS-713

Year: IV  
Course Coordinator Name: Dr. Ankur Bhardwaj

Semester: VII

### 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.
- ❖ 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  
Course Name: Machine Learning

Academic Session: 2023-24  
Course Code: KOE-073

Year: IV Semester: VII  
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)**

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# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of Computer Science & Engineering

Program Name: B. Tech  
Course Name: Machine Learning

Academic Session: 2023-24  
Course Code: KOE-073

Year: IV  
Semester: VII  
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)

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