# B.TECH.

## COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

## CURRICULUM STRUCTURE

| Sl. No. | Subject Codes | Subject | Periods | | | Evaluation Scheme | | | | End Semester | | Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | CT | TA | Total | PS | TE | PE | | |
| 1 | KCS501 | Database Management System | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 2 | KAI501 | Artificial Intelligence | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 3 | KCS503 | Design and Analysis of Algorithm | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 4 | Dept. Elective-I | Departmental Elective-I | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 5 | Dept. Elective-II | Departmental Elective-II | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 6 | KCS551 | Database Management System Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 7 | KAI551 | Artificial Intelligence Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 8 | KCS553 | Design and Analysis of Algorithm Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 9 | KCS554 | Mini Project or Internship Assessment* | 0 | 0 | 2 | | | | 50 | | | 50 | 1 |
| 10 | KNC501/ KNC502 | Constitution of India. Law and Engineering / Indian Tradition, Culture and Society | 2 | 0 | 0 | 15 | 10 | 25 | | 50 | | | |
| 11 | | MOOCs (Essential for Hons. Degree) | | | | | | | | | | | |
| | | **Total** | | | | | | | | | | 950 | 22 |

*The Mini Project or internship (4 weeks) conducted during summer break after IV semester and will be assessed during V semester.

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

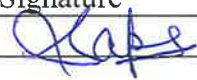**Program Name:** B.Tech     **Academic Session:** 2023-24     **Year:** 2023     **Semester:** V

**CourseName:** Database Management System    **CourseCode:** KCS-501    **Course Coordinator Name:** Dr. Sapna Juneja

**CourseOutcomes**

| CONo. | StatementofCourseOutcome | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|-------|--------------------------|------------------------|---------------------------|------------------------|
| | After completion of the course, the student will be able to | | | |
| CO1 | Describe the features of a database system,its languages, keys and relationship among the keys and structuring of ER Diagram | PO1, PO12, PSO1 | 2 | C |
| CO2 | Apply query processing techniques to automate the real timeproblems of databases. | PO1, PO2, PO3, PO5,PO10, PO11,PO12, PSO1 | 3 | P |
| CO3 | Illustrate the Normalization and its applicability in DatabaseDesigning. | PO1, PO10, PO11, PO12, PSO1 | 3 | F, C |
| CO4 | Identify the serializability and recovery and its associated concepts in transaction management. | PO1, PSO1 | 2 | C |
| CO5 | Explain different approaches of Concurrency control and related protocols | PO1, PO12, PSO1 | 2 | C |

| Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|
| 1.   Dr. Sapna Juneja | |

**Signature of CourseCoordinator**      **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: V**
**CourseName:Database Management System  CourseCode: KCS-501**  **Course Coordinator Name:Dr. Sapna Juneja**

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO/ APO | |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|        | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 1  | 2  |
| CO1    | 3  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | 2  | 3  | -  |
| CO2    | 2  | 3  | 3  | -  | 2  | -  | -  | -  | -  | 3  | 2  | 1  | 3  | -  |
| CO3    | 3  | -  | -  | -  | -  | -  | -  | -  | -  | 1  | 1  | 1  | 3  | -  |
| CO4    | 2  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | 1  | 3  | -  |
| CO5    | 2  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | 1  | 3  | -  |
| POTarget | 2.4 | 3 | 3 | - | 2 | - | - | - | - | 2 | 1.5 | 1.2 | 3 | - |

| Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|
| 1.   Dr. Sapna Juneja               |           |

**Signature of CourseCoordinator**       **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

## Department of CSE(AI&ML)

**Program Name:** B.Tech    **Academic Session: 2023-24 Year:2023**    **Semester: V**
**CourseName:** Artificial Intelligence    **CourseCode: KAI-501**    **Course Coordinator Name: Dr. Sayani Ghosal**
**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel(BL) | KnowledgeCategory(KC) |
|---|---|---|---|---|
| CONo. | StatementofCourseOutcome | | | |
| CO1 | Understand the fundamental concepts, theories, and techniques in artificial intelligence (AI), and apply diverseapproaches foreffective problem-solving. | PO1, PO2, PSO2 | 2 | C |
| CO2 | Analyze search techniques and gaming theory. | PO1, PO2, PO4, PSO2 | 4 | P |
| CO3 | Apply knowledge representation techniques and problem-solving strategies to common AI applications. | PO1, PO2, PO3, PO4,PO5, PO6, PSO2 | 3 | P |
| CO4 | Examine the use case of AI in real-world societal problems and Software agents. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO12,PSO2 | 4 | P |
| CO5 | Analyze the applicability of the Artificial Intelligence Approach to develop sustainable solutions using professional ethics. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO11, PO12, PSO2 | 4 | P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Dr. Sayani Ghosal | |

**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 CSE(AI&ML)

**Program Name:**B.Tech  **Academic Session:** 2023-24  **Year:**2023  **Semester: V**
**CourseName:**Artificial Intelligence  **CourseCode:  KAI-501**  **Course Coordinator Name: Dr. Sayani Ghosal**

### CO - PO/PSO/APO Matrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO/ APO | |
|--------|---|---|---|---|---|---|---|---|---|----|----|----|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CO2 | 3 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | 3 |
| CO3 | 3 | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | 3 |
| CO4 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | - | - | - | - | 3 | - | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 3 | - | 3 |
| POTarget | 3 | 2.4 | 2.7 | 2 | 3 | 2.7 | 2 | 2 | 2 | - | 2 | 3 | - | 3 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Dr. Sayani Ghosal | |

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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

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

**CourseName:** Design and Analysis of Algorithm    **CourseCode:** KCS-503    **Course Coordinator Name:** Mr. Abhishek Kumar

**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| CONo. | StatementofCourseOutcome | | | |
| CO1 | Analyze running time of algorithms using asymptotic methods. | PO1, PO2, PO3, PO4, PO5, PO9, PO10, PO12, PSO1 | 3 | C, P |
| CO2 | Analyze advanced data structure algorithms to calculate their complexities. | PO1, PO2, PO3, PO4, POPO6, PO8, PO9, PO10, PO12, PSO1 | 3 | C, P |
| CO3 | Create solutions of Optimization problems using Greedy Approach. | PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1 | 3 | P, M |
| CO4 | Apply backtracking, branch-bound and dynamic programming approaches for finding efficient solutions. | PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1 | 3 | P, M |
| CO5 | Understand the concepts of NP completeness and find alternatesolutions using Randomized and approximation algorithms. | PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1 | 3 | P, M |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Mr. Abhishek Kumar | *Abhishek Kumar* |

*Abhishek Kumar*
**Signature of CourseCoordinator**       **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:** B.Tech  **Academic Session:** 2023-24  **Year:** 2023  **Semester:** V
**CourseName:** Design and Analysis of Algorithm  **CourseCode:** KCS-503  **Course Coordinator Name:** Mr. Abhishek Kumar

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO/ APO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | 2 | - | 3 | 3 | - |
| CO2 | 3 | 3 | 3 | 3 | 2 | 2 | - | 1 | 1 | 1 | - | 3 | 3 | - |
| CO3 | 3 | 3 | 2 | 3 | 3 | 2 | - | 2 | 1 | 1 | 2 | 3 | 3 | - |
| CO4 | 3 | 3 | 3 | 3 | 2 | 2 | - | 2 | 2 | 1 | 3 | 3 | 3 | - |
| CO5 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 1 | 1 | 1 | 2 | 3 | - |
| POTarget | 2.8 | 2.8 | 2.6 | 2.8 | 2.2 | 1.6 | - | 1.8 | 1.4 | 1.2 | 1.2 | 2.8 | 3 | - |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Mr. Abhishek Kumar | Abhishek Kumar |

Abhishek Kumar
**Signature of CourseCoordinator**      **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:** B.Tech **Academic Session:** 2023-24 **Year:** 2023 **Semester:** V
**CourseName:** Mathematical Foundation AI, ML and Data Science (DE-1) **CourseCode:** KAI-051 **Course Coordinator Name:** Ms. Richa

**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| CO1 | Perform statistical analysis and appropriate statistical tests using R and visualize the outcome. | PO1, PO2, PO3, PO4,PO5, PO6, PO12 PSO2 | 2 | C |
| CO2 | Analyze the probability Distribution and linear method of regression analysis on a variety of data. | PO1, PO2, PO3, PO4,PO5, PO6, PO12 PSO2 | 4 | P |
| CO3 | Apply the manipulated data, design, and simple Monte Carlo experiments, and be able to use resampling methods. | PO1, PO2, PO3, PO4,PO5, PO6, PO12 PSO2 | 3 | P |
| CO4 | Examine the vector concept and advanced knowledge of inner product spaces with inequalities. | PO1, PO2, PO3, PO4,PO5, PO6, PO12 PSO2 | 4 | P |
| CO5 | Analyze Linear transformation and eigenvalues, eigenvectors, and their roles in orthogonal diagonalization of symmetric matrices. | PO1, PO2, PO3, PO4,PO5, PO6, PO12 PSO2 | 4 | P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Ms. Richa Singh | |

**Signature of CourseCoordinator**      **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

**Program Name:B.Tech**          **Academic Session: 2023-24**          **Year:2023**          **Semester: V**
**CourseName:Mathematical Foundation AI, ML and Data Science (DE-1) CourseCode: KAI-051 Course Coordinator Name:Ms. Richa**

## CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(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 | - | 2 |
| CO2 | 3 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | - | 2 |
| CO3 | 2 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | - | 2 |
| CO4 | 3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | - | 2 |
| POTarget | 2.6 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Ms. Richa Singh | |

**Signature of CourseCoordinator**          **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

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

**CourseName:Business Intelligence and Analytics (DE-1)CourseCode: KDS-051   Course Coordinator Name: Dr. Abha Kiran Rajpoot**

**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| **CO1** | Define the importance of data in business by introducing Intelligence in business strategies. | PO1,      PO2,      PO3, PO4,PO11, PO12, PSO2 | 2 | F |
| **CO2** | Explain the process of data analytics and best practices for datamining and pitfalls of managingdata analytics projects. | PO1,  PO2,  PO3,  PO4, PO5, PO11, PO12, PSO2 | 3 | M |
| **CO3** | Discuss fundamental concepts, theories, methods and modelswithin Business Intelligence and DataWarehousing | PO1,  PO2,  PO3,  PO4, PO5, PO11, PO12, PSO2 | 3 | C |
| **CO4** | Analyze business intelligence using different categorization ofoperations such as extraction, cleansing, integrating, visualizing using Tableau. | PO1,  PO2,  PO3,  PO4, PO5, PO9,PO11, PSO2 | 4 | C |
| **CO5** | Evaluate the impact of DM and DW and identify the Issues andchallenges.in managing capabilities and cost in Business bydecision analysis. | PO1,  PO2,  PO3,  PO4, PO5,  PO6,PO11,  PO12, PSO2 | 4 | M |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Dr. Abha Kiran Rajpoot | |

**Signature of CourseCoordinator**          **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

Program Name:B.Tech      Academic Session: 2023-24      Year:2023      Semester: V
CourseName:Business Intelligence and Analytics (DE-1)CourseCode: KDS-051 Course Coordinator Name:Dr. Abha Kiran Rajpoot

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|--------|---|---|---|---|---|---|---|---|---|----|----|----|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 | 3 | - | 2 |
| CO2 | 3 | 3 | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | - | 3 |
| CO3 | 2 | 2 | 2 | 3 | 2 | - | - | - | - | - | 2 | 3 | - | 2 |
| CO4 | 3 | 3 | 3 | 2 | 3 | - | - | - | 2 | - | 3 | 2 | - | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 2 | - | - | - | - | 2 | 3 | - | 3 |
| POTarget | 2.6 | 2.6 | 2.6 | 2.6 | 2.2 | 2 | - | - | 2 | - | 2.4 | 2.6 | - | 2.6 |

| Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|
| 1.  Dr. Abha Kiran Rajpoot | |

Signature of CourseCoordinator      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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

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

**CourseName:** Cloud Computing (DE-2)    **CourseCode:** KML-051    **Course Coordinator Name:** Ms. Anjali Chauhan

**CourseOutcomes**

| CONo. | After completion of the course, the student will be able to — StatementofCourseOutcome | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory KC) |
|---|---|---|---|---|
| CO1 | Describe architecture and underlying principles of cloud computing. | PO1, PO2, PSO2 | 2 | C |
| CO2 | Explain need, types, and tools of Virtualization for cloud. | PO1, PO2, PO3, PO4, PSO2 | 4 | P |
| CO3 | Describe Services Oriented Architecture and various types of cloudservices. | PO1, PO2, PO3, PO4, PO5, PO6, PSO2 | 3 | P |
| CO4 | Explain Inter cloud resources management cloud storage services and their providers Assess security services and standards for cloud computing | PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO2 | 4 | P |
| CO5 | Analyze advanced cloud technologies. | PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO11, PO12, PSO2 | 4 | P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Ms. Anjali Chauhan | |

**Signature of CourseCoordinator**     **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:** B.Tech    **Academic Session:** 2023-24    **Year:** 2023    **Semester:** V
**CourseName:** Cloud Computing (DE-2)    **CourseCode:** KML-051    **Course Coordinator Name:** Ms. Anjali Chauhan

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CO2 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 |
| CO3 | 3 | 2 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 2 | - | - | - | - | - | 2 | - | 3 |
| CO5 | 3 | 2 | 3 | 2 | 3 | 2 | - | 2 | 2 | 3 | 3 | 2 | - | 3 |
| POTarget | 3 | 2 | 3 | 2 | 3 | 2 | - | 2 | 2 | 3 | 3 | 2 | - | 3 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Ms. Anjali Chauhan | |

**Signature of CourseCoordinator**    **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: V**
**CourseName:Natural Language Processing (DE-2)  CourseCode: KAI-052**  **Course Coordinator Name: Dr. Sayani Ghosal**

**CourseOutcomes**

| CONo. | StatementofCourseOutcome | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| | After completion of the course, the student will be able to | | | |
| CO1 | Define the fundamentals concepts of natural language processing, their various phases with word level analysis. | PO1, PO2, PO3, PO4,PO9, PO12, PSO2 | 2 | C, P |
| CO2 | Understand the depth level concept of syntactic analysis with grammatical rules in NLP. | PO1, PO2, PO3, PO4,PO9, PO12, PSO2 | 2 | C, P |
| CO3 | Analyze the role of semantic analysis in NLP with word sense disambiguation. | PO1, PO2, PO3, PO4,PO5, PO9, PO12, PSO2 | 4 | C, P |
| CO4 | Explain the basic concept of Speech Processing and Related Parameters of Speech. | PO1, PO2, PO3, PO4,PO5, PO9, PO12, PSO2 | 2 | C, P |
| CO5 | Apply feature extraction approach for various real world NLP applications. | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO11, PO12, PSO2 | 3 | C, P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Dr. Sayani Ghosal | |

**Signature of CourseCoordinator**    **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:** B.Tech     **Academic Session:** 2023-24     **Year:** 2023     **Semester:** V
**CourseName:** Natural Language Processing (DE-2)    **CourseCode:** KAI-052     **Course Coordinator Name:** Dr. Sayani Ghosal

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 1 | - | - | - | - | 2 | - | - | 2 | - | 3 |
| CO2 | 3 | 3 | 3 | 2 | - | - | - | - | 2 | - | - | 1 | - | 3 |
| CO3 | 3 | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | 1 | - | 3 |
| CO4 | 3 | 2 | 3 | 2 | 2 | - | - | - | 2 | - | - | 1 | - | 3 |
| CO5 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | - | 2 | 2 | - | 3 |
| POTarget | 2.6 | 2.6 | 2.6 | 2 | 1.4 | 2 | 2 | 2 | 2 | - | 2 | 1.4 | - | 3 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Dr. Sayani Ghosal | |

**Signature of CourseCoordinator**     **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

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name: B.Tech.**　　　　**Academic Session: 2023-24**　　**Year:2023**　　**Semester: V**
**Course Name: Database Management System Lab**　　**Course Code: KCS-551**　　**Course Coordinator Name: Dr. Sapna Juneja**
**Course Outcomes**

| CO No. | After completion of the course, the student will be able to — Statement of Course Outcome | Relevant POs/ PSOs/ APOs | Revised Bloom's Level (BL) | Knowledge Category (KC) |
|---|---|---|---|---|
| CO1 | Apply oracle 10 g for creatingtables and other database objects. | PO1, PO9, PO11,PO12, PSO1 | 3 | C, P |
| CO2 | Implement a database schema for anycase study. | PO1, PO3, PO9, PO11, PO12, PSO1 | 3 | C, P |
| CO3 | Write and execute simple and complex queries using DDL, DML by enforcing integrity constraints. | PO1, PO3, PO9, PO11, PO12, PSO1 | 3 | C, P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.　Dr. Sapna Juneja | |

**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 CSE(AI&ML)

**Program Name: B.Tech.**  **Academic Session: 2023-24**  **Year:2023**  **Semester: V**
**Course Name: Database Management System Lab**  **Course Code: KCS-551**  **Course Coordinator Name: Dr. Sapna Juneja**

### 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 | - | - | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |
| CO2 | 3 | - | 2 | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |
| CO3 | 3 | - | 2 | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |
| PO Target | 3 | - | 2 | - | - | - | - | - | 1 | -- | 2 | 1 | 3 | - |

| Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|
| 1.  Dr. Sapna Juneja |  |

**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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:** B.Tech      **Academic Session:** 2023-24      **Year:** 2023      **Semester:** V
**CourseName:** Artificial Intelligence Lab      **CourseCode:** KAI-551      **Course Coordinator Name:** Ms. Richa Singh
**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| CO1 | Understand the concept of AI using Python. | PO1, PO2, PO3, PO4, PO5, PSO1, PSO2 | 4 | M |
| CO2 | Implement different AI Techniques in practical life. | PO1, PO2, PO3, PO4, PO5, PSO1, PSO2 | 5 | F |
| CO3 | Understand the practical application of Natural Language toolkit. | PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO11, PO12, PSO1, PSO2 | 4 | C |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.  Dr. Sayani Ghosal | *(signature)* | 2.  Ms. Richa Singh | *(signature)* |


**Signature of CourseCoordinator**      **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name:** B.Tech  **Academic Session:** 2023-24  **Year:** 2023  **Semester:** V
**CourseName:** Artificial Intelligence Lab  **CourseCode:** KAI-551  **Course Coordinator Name:** Ms. Richa Singh

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|--------|----|-----|-----|-----|-----|---|---|---|---|----|----|----|----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 2 | 1 | 2 | 1 | 1 | - | - | - | - | - | - | - | 1 | 1 |
| CO2 | 2 | 2 | 3 | 2 | 1 | - | - | - | - | - | - | - | 1 | 1 |
| CO3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | - | 3 | - | 2 | 2 | 1 | 2 |
| POTarget | 2.3 | 1.6 | 2.6 | 1.6 | 1.3 | 3 | 3 | - | 3 | - | 2 | 2 | 1 | 1.3 |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.  Dr. Sayani Ghosal | | 2.  Ms. Richa Singh | |

**Signature of CourseCoordinator**      **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

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

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

**Course Name: Design and Analysis of Algorithm Lab**    **Course Code: KCS-553**      **Course Coordinator Name: Mr. Abhishek 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 basic techniques for designing algorithms, including the techniques of recursion and iterative approach. | PO1,PO2,PO3,PO4,PO5,PO6,PO11,PO12,PSO2 | 2 | C, P |
| **CO2** | Apply algorithms to solve real world problems using various algorithm design strategies. | PO1,PO2,PO3,PO4,PO5,PO6,PO11,PO12,PSO2 | 3 | C, P |
| **CO3** | Analyze the performance of algorithms with respect to time and space complexity. | PO1,PO2,PO3,PO4,PO5,PO6,PO11,PO12,PSO2 | 4 | C, P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Mr. Abhishek 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)**

❖ 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 CSE(AI&ML)

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

**Course Name: Design and Analysis of Algorithm Lab**  **Course Code: KCS-553**  **Course Coordinator Name: Mr. Abhishek Kumar**

### 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 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - | 1 |
| CO2 | 3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - | 2 |
| CO3 | 3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - | 2 |
| PO Target | 3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - | 1.67 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Mr. Abhishek 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)**

❖ 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 CSE(AI&ML)

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

**Course Name: Mini Project/Internship Assessment**    **Course Code: KCS-554**      **Course Coordinator Name: Ms. Bhawna**

### 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 | 2 | - | - | 2 | 2 | 2 | 3 | 2 | 2 |
| **CO2** | 3 | 3 | 3 | 3 | 3 | - | - | - | 2 | - | 2 | 3 | 2 | 3 |
| **CO3** | 3 | 3 | 3 | 3 | 3 | 1 | - | - | 3 | - | 2 | 2 | 3 | 2 |
| **PO Target** | 3 | 3 | 3 | 3 | 3 | 1.5 | - | - | 2.4 | 2 | 2 | 2.7 | 2.4 | 2.4 |

| Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|
| 1. Ms. Bhawna | |

**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 CSE(AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24**  **Year:2023**  **Semester: V**
**Course Name: Mini Project/Internship Assessment**  **Course Code: KCS-554**  **Course Coordinator Name: Ms. Bhawna**
**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 a problem and gather its requirements, then design a solution using the latest tools and techniques. | PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2 | 2 | F |
| **CO2** | Develop a project utilizing the latest technology to address the identified problem. | PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO1, PSO2 | 5 | C |
| **CO3** | Enhance professional skills and critical thinking through the development process, culminating in the ability to present project work to evaluators. | PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2 | 4 | P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Ms. Bhawna | |

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

## Department of CSE (AI&ML)

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

**CourseName:** Constitution of India   **CourseCode:** KNC-501   **Course Coordinator Name:** Dr. Shelly Gupta

**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel(BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| **CO1** | Explore the basic features and modalities about the Indian constitution. | PO6, PO7 | 2 | F, C |
| **CO2** | Analyze the functioning of Indian parliamentary system at the center and state level | PO6, PO7, | 3 | F, P |
| **CO3** | Explore aspects of the Indian Legal System and its related bodies. | PO6, PO7, PO8 | 2 | F, C |
| **CO4** | Apply different laws and regulations related to engineering practices. | PO6, PO7, PO8, PO10 | 2 | F, C |
| **CO5** | Correlate role of engineers with different organizations and governance models | PO6, PO7, PO8, PO9, PO10, PO11, PO12 | 2 | F, C |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Dr. Shelly Gupta | |

**Signature of CourseCoordinator**   **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

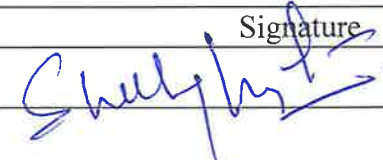**Program Name:** B.Tech   **Academic Session:** 2023-24   **Year:** 2023   **Semester:** V
**CourseName:** Constitution of India   **CourseCode:** KNC-501   **Course Coordinator Name:** Dr. Shelly Gupta
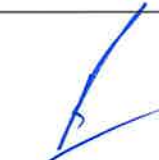
### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|--------|----|----|----|----|----|-----|---|-----|---|----|----|----|-----|---|
|        | 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  | -   | - |
| POTarget | - | - | - | - | - | 2.8 | 2 | 1.6 | 2 | 2  | 2  | 2  | -   | - |

| Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|
| 1.  Dr. Shelly Gupta                |           |

**Signature of CourseCoordinator**        **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).

# SEMESTER –III

| SN | Subject Code | Subject | Type | Category | Periods | | | Sessional Component | | Sessional (SW) (TS/PS) | End Semester Examination (ESE) | Total SW+ESE | Credit Cr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | L | T | P | CT | TA | CT+TA | TE/PE | | |
| 1 | BOE3** / BAS303 | Science Based Open Elective/BSC (Maths-III/Math IV/ Math V) | T | ES/BS | 3 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 4 |
| 2 | BVE301 / BAS301 | Universal Human Value and Professional Ethics/ Technical Communication | T | VA/HS | 2 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| 3 | BCS301 | Data Structure | T | PC | 3 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 4 |
| 4 | BCS302 | Computer Organization and Architecture | T | PC | 3 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 4 |
| 5 | BCS303 | Discrete Structures & Theory of Logic | T | PC | 2 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| 6 | BCS351 | Data Structure Lab | P | PC | 0 | 0 | 2 | | 50 | 50 | 50 | 100 | 1 |
| 7 | BCS352 | Computer Organization and Architecture Lab | P | PC | 0 | 0 | 2 | | 50 | 50 | 50 | 100 | 1 |
| 8 | BCS353 | Web Designing Workshop | P | PC | 0 | 0 | 2 | | 50 | 50 | 50 | 100 | 1 |
| 10 | BCC301 / BCC302 | Cyber Security/Python programming | T | VA | 2 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 2 |
| 11 | BCC351 | Internship Assessment /Mini Project* | P | | | | | | | 100 | | 100 | 2 |
| | | Total | | | 15 | 5 | 6 | | | | | | 25 |

- **Mathematics –III** for CE / ENV and allied branches
- **Mathematics-IV** for Computer/Electronics/Electrical & allied Branches, Mechanical & Allied Branches Textile/Chemical & allied Branches
- **Mathematics-V** for Bio Technology / Agriculture Engineering

## Department of CSE (AI&ML)

**Program Name: B.Tech**     **Academic Session: 2023-24**     **Year:2023**     **Semester: III**
**Course Name: Math-IV**     **Course Code:BAS-303**     **Course Coordinator Name: Dr. Neelam Chantola**

**Course Outcomes**

| CO No. | Statement of Course Outcome | Relevant POs/ PSOs/ APOs | Revised Bloom'sLevel (BL) | Knowledge Category (KC) |
|---|---|---|---|---|
| After completion of the course, the student will be able to | | | | |
| CO1 | Solve partial differential equations using Lagrange's method, Charpit method and other particular methods. | PO1, PO2, PO12 | 3 | C & P |
| CO2 | Apply the method of separation of variables to solve the Wave, Heat and Laplace equation. Application of Fourier transform. | PO1, PO2, PO3, PO12 | 3 | C & P |
| CO3 | Determine moments, correlation, linear regression lines and obtain best fitting curves to the given data. | PO1, PO2, PO3, PO4, PO5, PO12 | 3 | C & P |
| CO4 | Apply the concepts of probability to solve discrete and continuous probability problems. | PO1, PO2, PO3, PO4, PO5, PO12 | 3 | C & P |
| CO5 | Apply the theory of sampling to solve t-test, Z-Test, Chi square test problems and compute the control charts for variable and attributes. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO 12 | 3 | C & P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Dr. Neelam Chantola | Nhantola |

**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

## Department of CSE (AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24**  **Year:2023**  **Semester: III**
**Course Name: Math-IV**  **Course Code:BAS-303**  **Course Coordinator Name: Dr. Neelam Chantola**

### 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 |
| CO2 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 1 | 1 |
| CO3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 2 | 1 | 1 |
| CO4 | 2 | 2 | 1 | 1 | 1 | - | - | - | - | - | - | 1 | 1 | 1 |
| CO5 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 1 | 1 |
| PO Target | 2 | 1.8 | 1.75 | 1.67 | 1.67 | 2 | 2 | - | - | - | - | 1.8 | 1 | 1 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Dr. Neelam Chantola | Nhantola ≠0 |

Nhantola ≠0

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

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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: III**
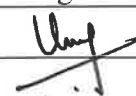
**CourseName:Universal Human Values**  **CourseCode:BVE-301**  **Course Coordinator Name: Ms. Umang Kant**

**CourseOutcomes**

| CONo. | StatementofCourseOutcome | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| | **After completion of the course, the student will be able to** | | | |
| CO1 | Understand the need and process of value education, comparison between values & skill, the meaning of happiness and prosperity. | PO6, PO7, PO8 | 2 | F, C |
| CO2 | Analyze the Harmony in the Self "the Co-existence of Self and Body" | PO6, PO7, PO8 | 4 | F, C |
| CO3 | Understand the value of harmonious relationship based on trust, respect, and other naturally acceptable feelings in human-human relationships | PO6, PO7, PO8 | 2 | F, C |
| CO4 | Analyze the harmony in nature, mutually fulfilling and participation in the nature. | PO6, PO7, PO8 | 4 | F, C |
| CO5 | Decide the role of holistic understanding of harmony on professional ethics. | PO6, PO7, PO8 | 5 | F, C |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.   Ms. Kavya Gupta | | 2.   Ms. Umang Kant | |

**Signature of CourseCoordinator**   **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

**Program Name: B.Tech**      **Academic Session: 2023-24 Year:2023**      **Semester: III**
**CourseName:Universal Human Values**      **CourseCode: BVE-301**      **Course Coordinator Name: Ms. Kavya Gupta**

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO/ APO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | - | - | - | - | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | - | - |
| CO2 | - | - | - | - | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | - | - |
| CO3 | - | - | - | - | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | - | - |
| CO4 | - | - | - | - | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | - | - |
| CO5 | - | - | - | - | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | - | - |
| POTarget | - | - | - | - | - | 2 | 2 | 3 | 1 | 1 | 1 | 1 | - | - |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1. Ms. Kavya Gupta | | 2. Ms. Umang Kant | |

**Signature of CourseCoordinator**      **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 CSE (AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: III**
**CourseName:Data Structure**  **CourseCode:BCS-301**  **Course Coordinator Name:Dr. Shelly Gupta**

**CourseOutcomes**

| CONo. | StatementofCourseOutcome | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel(BL) | KnowledgeCategory(KC) |
|---|---|---|---|---|
| **CO1** | Understand the concept of memory allocation and using it for array and linked list data structures. | PO1,PO2,PSO1 | 2 | C |
| **CO2** | Apply the concept of stack and queue in finding solutions of real-world problems. | PO1,PO2,PO4,PSO1 | 3 | P |
| **CO3** | Assess the searching and sorting algorithms, and recommend the best suited algorithm based on the given scenario. | PO1,PO2,PO3,PO4,PO5, PO6,PSO1 | 3 | P |
| **CO4** | Contrast the role of Graph as non linear data structure and find the solutions of the problems using Graph based algorithm. | PO1,PO2,PO3,PO4,PO5, PO6,PO7,PO12,PSO1 | 4 | P |
| **CO5** | Analyze the tree data structure and its variants applying these concepts for problem solving. | PO1,PO2,PO3,PO4,PO5, PO6,PO7,PO8,PO9,PO11, PO12,PSO1 | 4 | P |

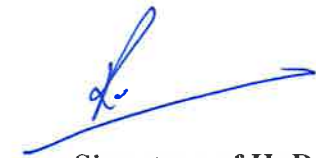| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.   Dr. Shelly Gupta | *Shelly Gupta* | 2.   Mr. Purshottam Trivedi | *Purushottam* |

**Signature of CourseCoordinator**       **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

## Department of CSE (AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: III**
**CourseName: Data Structure**  **CourseCode: BCS-301**  **Course Coordinator Name:Dr. Shelly Gupta**

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO/ APO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 3 | 3 | 3 | - | - | - | - | 2 | 2 | 3 | 3 | 3 | - |
| CO2 | 3 | 3 | 3 | 3 | - | - | - | - | 2 | 2 | 3 | 3 | 3 | - |
| CO3 | 3 | 3 | 3 | 3 | - | - | - | - | 2 | 2 | 3 | 3 | 3 | - |
| CO4 | 3 | 3 | 3 | 3 | - | - | - | - | 2 | 2 | 3 | 3 | 3 | - |
| CO5 | 3 | 3 | 3 | 3 | - | - | - | - | 2 | 2 | 3 | 3 | 3 | - |
| POTarget | 3 | 3 | 3 | 3 | - | - | - | - | 2 | 2 | 3 | 3 | 3 | - |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.  Dr. Shelly Gupta | | Mr. Purshottam Trivedi | Purushottam |

**Signature of CourseCoordinator**      **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

## Department of CSE (AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24Year:2023**  **Semester: III**
**CourseName:Computer Organization and ArchitectureCourseCode:BCS-302   Course Coordinator Name:Ms. Bhawna**
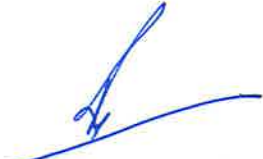**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| **CO1** | Describe the fundamental components of basic computer system and its organization. | PO1, PO2, PO3, PO4, PO5, PO12, PSO1 | 2 | P, C |
| **CO2** | Apply arithmetic and logical microoperations on binary number system | PO1, PO2, PO3, PO4, PO5, PO12,PSO1 | 3 | P, C |
| **CO3** | Analyze control unit design and concept of pipelining | PO1, PO2, PO3, PO4, PO5, PO12,PSO1 | 4 | P, C |
| **CO4** | Examine memory hierarchy and numerical problem | PO1, PO2, PO3, PO4, PO5, PO12,PSO1 | 4 | P, C |
| **CO5** | Analyze the concept of input output organization. | PO1, PO2, PO3, PO4, PO5, PO12, PSO1 | 4 | P, C |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Ms. Bhawna | |

**Signature of CourseCoordinator**     **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

**Program Name: B.Tech**      **Academic Session: 2023-24 Year:2023**      **Semester: III**
**CourseName:Computer Organization and ArchitectureCourseCode:BCS-302**      **Course Coordinator Name: Ms. Bhawna**

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO/ APO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - |
| CO2 | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - |
| CO3 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - |
| CO4 | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - |
| CO5 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - |
| POTarget | 2.6 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Ms. Bhawna | |

**Signature of CourseCoordinator**      **Assoc./ Asst. Head DOC**      **Signature of Addl. HoD**      **Signature of HoD**

## Department of CSE (AI&ML)

**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 CSE (AI&ML)

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

**CourseName:Discrete Structures & Theory of Logic  CourseCode:BCS-303**   **Course Coordinator Name: Ms. Kavya Gupta**

**CourseOutcomes**

| CONo. | After completion of the course, the student will be able to | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| | StatementofCourseOutcome | | | |
| CO1 | Acquire Knowledge of sets, relations, and their properties. | PO1, PO2, PSO1 | 2 | C, P |
| CO2 | Apply fundamental concepts of functions and Boolean algebra. | PO1, PO2, PSO1 | 3 | C, P |
| CO3 | Employ the rules of propositions and predicate logic to solve the logical problems. | PO1, PO2, PO3, PO10,PO12, PSO1 | 3 | C, P |
| CO4 | Explore the concepts of group theory and their applications. | PO1, PO2, PO3, PO4,PO12, PSO1 | 4 | C, P |
| CO5 | Illustrate the principles and concepts of graph theory. | PO1, PO2, PO3,PO4, PO10, PO12, PSO1 | 3 | C, P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Ms. Kavya Gupta | |

**Signature of CourseCoordinator**     **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

**Program Name: B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: III**
**CourseName:Discrete Structures & Theory of Logic  CourseCode:BCS-303**  **Course Coordinator Name:Ms. Kavya Gupta**

## CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| CO2 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| CO3 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | - | 2 | 2 | - |
| CO4 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 2 | 2 | - |
| CO5 | 3 | 2 | 3 | 2 | - | - | - | - | - | 2 | - | 2 | 2 | - |
| POTarget | 2.8 | 2 | 2.3 | 2.5 | - | - | - | - | - | 2 | - | 2 | 2 | - |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Ms. Kavya Gupta | |

**Signature of CourseCoordinator**   **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

## Department of CSE (AI&ML)

**Program Name: B.Tech**      **Academic Session: 2023-24 Year:2023**      **Semester: III**
**CourseName:Data Structure Lab**      **CourseCode:BCS-351**      **Course Coordinator Name:Dr. Shelly Gupta**
**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel (BL) | KnowledgeCategory (KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| **CO1** | Implement linear data structures Array, linked lists, stack, Queue, and their operations. | PO1, PO2 PO3, PO4, PO5, PO9, PO10, PO11 PO12, PSO2 | 5 | C |
| **CO2** | Develop programs for sorting and searching algorithms using relevant data structures. | PO1, PO2 PO3, PO4, PO5, PO10, PO11 PO12, PSO2 | 4 | F |
| **CO3** | Develop programs for implementing non-linear data structure trees, graphs, and their traversal operations. | PO1, PO2 PO3, PO4, PO5, PO10, PO11 PO12, PSO2 | 5 | C |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1. Dr. Shelly Gupta | *(signature)* | ·2.Mr. Purshottam Trivedi | *(signature)* Purushottam |

**Signature of CourseCoordinator**      **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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

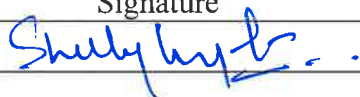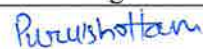**Program Name: B.Tech**  **Academic Session: 2023-24  Year:2023**  **Semester: III**
**CourseName:Data Structure Lab**  **CourseCode:BCS-351**  **Course Coordinator Name:Dr. Shelly Gupta**

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|--------|---|---|---|---|---|---|---|---|---|----|----|----|---|---|
|        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 3 | 3 | 3 | 2 | - | - | - | 3 | 2 | 3 | 3 | - | 3 |
| CO2 | 3 | 3 | 3 | 3 | 2 | - | - | - | 3 | 2 | 3 | 3 | - | 3 |
| CO3 | 3 | 3 | 3 | 3 | 2 | - | - | - | 3 | 2 | 3 | 3 | - | 3 |
| POTarget | 3 | 3 | 3 | 3 | 2 | - | - | - | 3 | 2 | 3 | 3 | - | 3 |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|-------------------------------------|-----------|-------------------------------------|-----------|
| 1.  Dr. Shelly Gupta | *Shelly Gupta* | 2. Mr. Purshottam Trivedi | *Purushottam* |

**Signature of CourseCoordinator**  **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 CSE(AI&ML)

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

**Course Name: Computer Organization and Architecture Lab**     **Course Code: BCS-352**   **Course Coordinator Name: Ms. Bhawna**

## 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 the table of Half adder and subtractor and implement it by using logic gates. | PO1, PO2, PO3, PO4, PO5, PO12, PSO1 | 3 | C, P |
| CO2 | Convert and implement binary values to gray value and revert it by using gates. | PO1, PO2, PO3, PO4, PO5, PO12, PSO1 | 3 | C, P |
| CO3 | Draw the block diagram of Multiplexers and Decoders, verify their output by changing the selection inputs, and also verify the excitation tables of various flip-flops. | PO1, PO2, PO3, PO4, PO5, PO12, PSO1 | 3 | C, P |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.  Ms. Bhawna | | | |

**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 CSE(AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24**  **Year:2023**  **Semester: III**
**Course Name: Computer Organization and Architecture Lab**  **Course Code: BCS-352**  **Course Coordinator Name: Ms. Bhawna**

## CO - PO/PSO/APO Matrix

| CO No. | Programme Outcome (PO) | | | | | | | | | | | | PSO | |
|--------|---|---|---|---|---|---|---|---|---|----|----|----|---|---|
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **1** | **2** |
| **CO1** | 2 | 2 | 2 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | - |
| **CO2** | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 | 2 | - |
| **CO3** | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 | 3 | - |
| **PO Target** | 2 | 2 | 2 | 2.4 | 3 | - | - | - | - | - | - | 3 | 2.7 | - |

| Faculty Members Teaching the Course | Signature | Faculty Members Teaching the Course | Signature |
|---|---|---|---|
| 1.   Ms. Bhawna | | | |

**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 CSE (AI&ML)

**Program Name: B.Tech**      **Academic Session: 2023-24**   **Year:2023**      **Semester: III**
**CourseName: Web Designing Workshop**     **CourseCode: BCS-353 Course Coordinator Name:Ms. Chanchal**
**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel(BL) | KnowledgeCategory(KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| **CO1** | Design web content using HTML and CSS, producing visually appealing and responsive web pages. | PO1, PO9,PO11, PO12, PSO1 | 3 | C, P |
| **CO2** | Apply JavaScript to add interactivity and dynamic functionality to websites, culminating in the development of single-page applications (SPAs) with React. | PO1, PO3, PO9, PO11 PO12, PSO1 | 3 | C, P |
| **CO3** | Design modern web projects, demonstrating their ability to follow best practices and adapt to evolving industry standards. | PO1, PO3, PO9, PO11 PO12, PSO1 | 3 | C, P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1. Ms. Chanchal | *chanchal* |


**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 CSE (AI&ML)

**Program Name: B.Tech    Academic Session: 2023-24  Year:2023    Semester: III**
**CourseName: Web Designing Workshop    CourseCode: BCS-353 Course Coordinator Name:Ms. Chanchal**

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | - | - | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |
| CO2 | 3 | - | 2 | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |
| CO3 | 3 | - | 2 | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |
| POTarget | 3 | - | 2 | - | - | - | - | - | 1 | - | 2 | 1 | 3 | - |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.    Ms. Chanchal | *chanchal* |

Signature of CourseCoordinator        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).

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

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

**CourseName: Python Programming    CourseCode: BCC-302**       **Course Coordinator Name: Dr. Abha Kiran Rajpoot**

**CourseOutcomes**

| After completion of the course, the student will be able to | | RelevantPOs/PSOs/ APOs | Revised Bloom'sLevel(BL) | KnowledgeCategory(KC) |
|---|---|---|---|---|
| **CONo.** | **StatementofCourseOutcome** | | | |
| **CO1** | Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements. | PO1, PO2, PSO2 | 2 | C |
| **CO2** | Express proficiency in the handling of strings and functions | PO1, PO2, PO4, PSO2 | 4 | P |
| **CO3** | Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples, and sets. | PO1, PO2, PO3, PO4, PO5, PO6, PSO2 | 3 | C |
| **CO4** | Identify the commonly used operations involving file systems and regular expressions. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO12, PSO2 | 4 | P |
| **CO5** | Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8,PO9, PO11, PO12, PSO2 | 4 | C |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Dr. Abha Kiran Rajpoot | |

**Signature of CourseCoordinator**       **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

# KIETGroupofInstitutions, Delhi – NCR, Ghaziabad

## Department of CSE (AI&ML)

Program Name: B.Tech          Academic Session: 2023-24  Year:2023          Semester: III
CourseName: Python Programming    CourseCode: BCC-302          Course Coordinator Name: Dr. Abha Kiran Rajpoot

### CO-PO/PSO/APOMatrix

| CO No. | ProgrammeOutcome(PO) | | | | | | | | | | | | PSO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CO2 | 3 | 2 | - | 1 | - | - | - | - | - | - | - | - | - | 3 |
| CO3 | 3 | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | 3 |
| CO4 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | - | - | - | - | 3 | - | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 3 | - | 3 |
| POTarget | 3 | 2.4 | 2.7 | 2 | 3 | 2.7 | 2 | 2 | 2 | - | 2 | 3 | - | 3 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Dr. Abha Kiran Rajpoot | |

**Signature of CourseCoordinator**          **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

# KIET Group of Institutions, Delhi – NCR, Ghaziabad

## Department of CSE(AI&ML)

**Program Name: B.Tech**
**Course Name: Mini Project/ Internship Assessment**
**Course Outcomes**

**Academic Session: 2023-24**
**Course Code: BCC-351**

**Year:2023**       **Semester: III**
**Course Coordinator Name: Ms. Bhawna**

| After completion of the course, the student will be able to | | Relevant POs/ PSOs/ APOs | Revised Bloom's Level (BL) | Knowledge Category (KC) |
|---|---|---|---|---|
| CO No. | Statement of Course Outcome | | | |
| CO1 | Explore potential areas in the field of Computer Science and Engineering (CSE). | PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, PO11, PO12, PSO1, PSO2 | 2 | F |
| CO2 | Compare various existing solutions to challenges in these areas. | PO1, PO2, PO3, PO4, PO5, PO9, PO11, PO12, PSO1, PSO2 | 5 | C |
| CO3 | Demonstrate the ability to work in teams, manage the study's conduct, propose a plan for creating a solution, and report the findings in the chosen domain. | PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO11, PO12, PSO1, PSO2 | 4 | P |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.   Ms. Bhawna | |

**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 CSE(AI&ML)

**Program Name: B.Tech**  **Academic Session: 2023-24**  **Year:2023**  **Semester: III**
**Course Name: Mini Project/ Internship Assessment**  **Course Code: BCC-351**  **Course Coordinator Name: Ms. Bhawna**

### 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 | 2 | - | - | 2 | 2 | 2 | 3 | 2 | 2 |
| CO2 | 3 | 3 | 3 | 3 | 3 | - | - | - | 2 | - | 2 | 3 | 2 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 3 | 1 | - | - | 3 | - | 2 | 2 | 3 | 2 |
| PO Target | 3 | 3 | 3 | 3 | 3 | 1.5 | 0 | 0 | 2.4 | 2 | 2 | 2.7 | 2.4 | 2.4 |

| Faculty Members Teaching the Course | Signature |
|---|---|
| 1.  Ms. Bhawna | |

**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).