DEPARTMENT OF COMPUTER APPLICATIONS

1st Semester [2024-25]				
S. No.	Course Code	Course Name	Name of Course Coordinator	Signature of Course Coordinator
1	ID101B	Programming for Computer Applications	Mr. Rabi N. Panda	
2	CS206L	Operating System	Ms. Shruti Aggarwal	
3	MA205L	Mathematical foundation of Data Science	Ms. Shweta Singh	
4	CS207B	Software Engineering	Dr. Amit Kumar	
5	ID103B	Design Thinking	Dr. Amit Kumar	
6	HS107L	Quantitative Aptitude & Logical Reasoning-I	Mr. Manish Gupta	
7	CS206P	Operating System Lab	Ms. Shruti Aggarwal	
8	EE101P	IoT & Embedded Systems Lab	Mr. Salim	
9	Id104B	Innovation and Entrepreneurship	Ms. Amit Kumar	
10	ID102B	Mini Project-I	Dr. Divya Singhal	
11	HS101B	Communication Skills	Dr. Babita Tyagi	

2nd Semester [2024-25]				
S. No.	Course Code	Course Name	Name of Course Coordinator	Signature of Course Coordinator
1	ID202L	Software Testing	Dr. Neelam Rawat	
2	CS204B	Cloud Computing	Ms. Shweta Singh	
3	HS201L	Quantitative Aptitude & Logical Reasoning-II	Mr. Manish Gupta	
4	CS202B	Data Structures and Algorithms	Ms. Shweta Singh	
5	CS203B	Database Management Systems	Mr. Rabi N. Panda	
6	AI101B	Introduction to AI	Mr. Apoorv Jain	
7	ID201B	Mini Project-II (Full Stack Development)	Dr. Vipin Kumar	
8	HS202B	Campus to Corporate	Ms. Ankita Banerjee	

3rd Semester [2025-26]				
S. No.	Course Code	Course Name	Name of Course Coordinator	Signature of Course Coordinator
1	CA205L	Analysis & Design of Algorithms	Dr. Prashant Agrawal	
2	CA103L	Computer Networks Technologies	Ms. Shalika	
3	CA206B	Web Development	Dr. Vipin Kumar	
4	CA205P	Analysis & Design of Algorithms Lab	Dr. Prashant Agrawal	
5	CA301P	Major Project-I	Ms. Shalika	
6	CA107P	Internship	Ms. Vaishali Sisaudia	
7	HS301P	Communication for Employability	Ms. Ankita Banerjee	
		Professional Elective-I		
8	CA208E	Machine Learning and GenAI	Dr. Neelam Rawat	
9	CA209E	Data Analytics Essentials	Mr. Saurabh Chaudhary	
10	CA211E	UI/UX Design for Web Development	Dr. Ankit Verma	
11	CA302E	Cloud-Native Development	Dr. Shashank Bhardwaj	

Dr. Neelam Rawat
OBE Coordinator
Department of Computer Applications

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Programming for Computer Application	**Course Code:** ID101B	**Faculty:** Mr. Rabi N. Panda Ms. Shweta Mr. Arpit Dogra Ms. Komal Salgotra

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply the concept of flow chart and branching.	3	P
CO2	Use the concept of looping structures and functions for a given problem.	3	P
CO3	Explore solution for the problems based on multi-dimensional arrays and pointers.	3	P
CO4	Demonstrate the operations using strings and structures.	3	P
CO5	Illustrate linear data structures like stacks and queues.	3	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	3	-	3	-	-	-	3
CO-2	3	3	-	1	-	-	-	3
CO-3	3	3	-	1	-	-	-	2
CO-4	3	3	-	1	-	-	-	2
CO-5	3	3	-	1	-	-	-	3
PO Target	**3**	**3**	**-**	**1.4**	**-**	**-**	**-**	**2.6**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Operating System	**Course Code:** CS206L	**Faculty:** Dr. Arun Tripathi Ms. Shruti Aggarwal Ms. Annu Yadav

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Discuss the role of operating systems and their types.	2	C
CO2	Apply the concept of CPU scheduling algorithms for execution of programs.	3	P
CO3	Apply the concept of inter-process communication, process synchronization and deadlock handling.	3	P
CO4	Discover memory management techniques.	3	C
CO5	Illustrate the concept of I/O management and file system.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	1	-	-	-	-	-	3
CO-2	3	3	-	-	-	-	-	2
CO-3	3	3	-	-	-	-	-	2
CO-4	3	3	-	-	-	-	-	2
CO-5	3	2	-	-	-	-	-	2
PO Target	**2.6**	**2.4**	-	-	-	-	-	**2.2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Mathematical Foundation of Data Science	**Course Code:** MA205L	**Faculty:** Ms. Shweta singh Mr. Apoorv Jain Ms. Annu Yadav Ms. Komal Salgotra

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply the concept of matrix in eigen vectors and Inner Product.	2	P
CO2	Apply the knowledge of matrix factorization in data decomposition.	3	P
CO3	Employ the probability distribution in the field of data science.	3	P
CO4	Apply the concept of statistics in testing hypothesis.	3	P
CO5	Apply the postulates of partial derivatives in optimization.	3	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	2	1	1	-	-	-	1
CO-2	2	2	1	1	-	-	-	2
CO-3	2	2	1	1	-	-	-	1
CO-4	2	2	1	1	-	-	-	2
CO-5	2	2	1	1	-	-	-	1
PO Target	**2**	**2**	**1**	**1**	-	-	-	**1.4**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Software Engineering	**Course Code:** CS207B	**Faculty:** Mr. Rabi N. Panda Dr. Amit Kumar Mr. Apoorv Jain

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the fundamental concepts of the software development process.	2	C
CO2	Apply the concept of requirement engineering in the SRS document.	3	P
CO3	Demonstrate the concepts of software design.	3	C
CO4	Elaborate concept of software maintenance and software project management.	3	C
CO5	Illustrate the fundamental concepts of Agile models.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	-	-	-	-	-	-	1
CO-2	2	3	2	-	1	-	-	3
CO-3	3	3	3	3	2	-	-	3
CO-4	3	2	1	1	1	-	-	3
CO-5	2	1	1	-	1	3	-	2
PO Target	**2.4**	**2.25**	**1.75**	**2**	**1.25**	**3**	**-**	**2.4**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2024-25**	**Semester: 1st Semester**
Course name: Design Thinking	**Course Code:** ID103B	**Faculty:** Dr. Amit Kumar

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Understand the basic requirements of a good design.	**2**	C
CO2	Empathies and ideate the solutions to problems in his environment	**3**	P
CO3	Prototype and test the developed solutions.	**3**	P
CO4	Apply the principles of design thinking on developing innovative solutions to the real-world problems.	**3**	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	3	3	2	2	-	-	2
CO-2	1	3	3	2	2	-	-	2
CO-3	1	3	3	2	2	-	-	2
CO-4	1	3	3	2	2	-	-	2
PO Target	**1**	**3**	**3**	**2**	**2**	**-**	**-**	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2024-25**	**Semester: 1st Semester**
Course name: Quantitative Aptitude & Logical Reasoning-I	**Course Code:** HS107L	**Faculty:** Mr. Manish Gupta

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Analyze problems, identify relevant information, and apply appropriate mathematical methods to reach solutions.	**4**	C
CO2	Analyze tasks and activities by following a chain of thought process and find logical solutions to a problem.	**4**	P
CO3	Analyze trends, patterns, and relationships within the data.	**4**	P

Course Code	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**
CO-1	2	2	-	-	-	-	-	1
CO-2	2	2	-	-	-	-	-	1
CO-3	1	1	-	-	-	-	-	1
PO Target	**1.7**	**1.7**	**-**	**-**	**-**	**-**	**-**	**1**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Programming for Computer Application Lab	**Course Code:** ID101P	**Faculty:** Mr. Rabi N. Panda Ms. Shweta Mr. Arpit Dogra Ms. Komal Salgotra

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply the concept of flow chart and branching.	3	C
CO2	Use the concept of looping structures and functions for a given problem.	3	P
CO3	Explore solution for the problems based on multi-dimensional arrays and pointers.	3	C
CO4	Demonstrate the operations using strings and structures.	3	C
CO5	Illustrate linear data structures like stacks and queues.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	3	-	3	-	-	-	3
CO-2	3	3	-	1	-	-	-	3
CO-3	3	3	-	1	-	-	-	2
CO-4	3	3	-	1	-	-	-	2
CO-5	3	3	-	1	-	-	-	3
PO Target	**3**	**3**		**1.4**	-	-	-	**2.6**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Operating System Lab	**Course Code:** CS206P	**Faculty:** Dr. Arun Tripathi Ms. Shruti Aggarwal Ms. Annu Yadav

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Discuss the role of operating systems and their types.	**3**	C
CO2	Apply the concept of CPU scheduling algorithms for execution of programs.	**3**	P
CO3	Apply the concept of inter-process communication, process synchronization and deadlock handling.	**3**	P
CO4	Analyze various memory management techniques.	**4**	C
CO5	Illustrate the concept of I/O management and file system.	**3**	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	1	-	-	-	-	-	3
CO-2	3	3	-	-	-	-	-	2
CO-3	3	3	-	-	-	-	-	2
CO-4	3	3	-	-	-	-	-	2
CO-5	3	2	-	-	-	-	-	2
PO Target	**2.6**	**2.4**	-	-	-	-	-	**2.2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2024-25**	**Semester: 1st Semester**
Course name: IoT and Embedded System lab	**Course Code:** EE101P	**Faculty:** Mr. Salim

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Understand the basic concepts of sensors and transducers.	2	C
CO2	Understand basics of embedded system and different IoT boards.	2	C
CO3	Apply basic operations and programming techniques of IoT devices.	3	P
CO4	Apply smart technology knowledge through case studies.	3	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	-	-	2	-	-	-	2
CO-2	2	-	2	2	2	-	-	2
CO-3	3	-	3	3	3	-	-	2
CO-4	3	2	3	3	3	-	-	2
PO Target	**2.5**	**2**	**2.67**	**2.5**	**2.67**	**-**	**-**	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2024-25**	**Semester: 1st Semester**
Course name: Innovation and Entrepreneurship	**Course Code:** ID104B	**Faculty:** Dr. Amit Kumar

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Demonstrate an understanding of the various types of innovation, their importance in personal and professional growth, and how to apply innovative thinking to solve real-world problems.	3	C
CO2	Gain the ability to generate and refine innovative ideas through creative techniques and utilize the Business Model Canvas to structure viable business concepts.	3	P
CO3	Develop the skills to conduct comprehensive market research, identify and segment target customers, and validate their business ideas based on market insights and data analysis.	3	P
CO4	Transform their innovative ideas into tangible prototypes (Minimum Viable Products) and will acquire the ability to craft and deliver compelling pitches for potential investors and stakeholders.	4	C
CO5	Effectively present their business ideas to industry experts and investors, apply feedback to improve their ideas, and explore opportunities for securing funding or mentorship.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	1	2	1	1	1	1	2
CO-2	2	2	2	1	1	1	1	2
CO-3	1	2	2	1	2	1	1	2
CO-4	1	2	2	1	2	1	1	2
CO-5	1	2	2	1	2	2	1	2
PO Target	**1.2**	**1.8**	**2**	**1**	**1.6**	**1.2**	**1**	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Mini Project-I	**Course Code:** ID102B	**Faculty:** Ms. Divya Singhal Mr. Arpit Dogra

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the working of web browser and web application.	2	C
CO2	Apply CSS on a web application.	3	P
CO3	Construct an interactive web page with the help of Java script.	3	P
CO4	Prepare interactive web page using advance Java script (ES6).	3	P
CO5	Change existing static website into an interactive one through the use of APIs to retrieve data.	3	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	3	2	3	-	-	1	1
CO-2	3	2	2	3	-	-	1	1
CO-3	3	2	2	3	1	2	1	1
CO-4	3	2	2	3	1	2	1	1
CO-5	3	2	1	3	2	3	1	2
PO Target	**3**	**2**	**1.8**	**3**	**1.3**	**2.3**	**1**	**1.2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 1st Semester
Course name: Communication Skills	**Course Code:** HS101B	**Faculty:** Ms. Ankita Banerjee Ms. Arunita Mukhopadhyay

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Analyze pronunciation and its application in communication.	**4**	C
CO2	Apply stress intonation and articulation in language for effective communication.	**3**	P
CO3	Understand the usage of vocabulary in real-life situations at the workplace.	**2**	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	-	-	-	-	3	-	-	2
CO-2	-	-	-	-	3	-	-	2
CO-3	-	-	-	-	3	-	-	2
PO Target	-	-	-	-	**3**	-	-	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Data Structures and Algorithms	**Course Code:** CS202B	**Faculty:** Dr. Akash Rajak Dr. Prashant Agrawal Ms. Shweta Dr. Shashank Bhardwaj

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Describe basic data structures such as arrays.	2	C
CO2	Illustrate data structures like linked list, stacks and queues.	3	P
CO3	Compare incremental and divide-and-conquer approaches of sorting and searching algorithms.	4	P
CO4	Demonstrate the properties of graphs & trees and implement various operations.	3	P
CO5	Analyze designing approaches such as greedy, dynamic programming and backtracking.	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	2	-	-	-	-	-	1
CO-2	3	3	3	-	2	-	-	2
CO-3	3	3	3	2	2	-	-	2
CO-4	3	3	3	1	-	-	-	2
CO-5	3	3	3	2	-	-	-	3
PO Target	**3**	**2.8**	**3**	**1.67**	**2**	-	-	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Database Management Systems	**Course Code:** CS203B	Faculty: Mr. Rabi N. Panda Dr. Neelam Rawat Ms. Annu Yadav Mr. Ritesh Kumar Gupta

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Understand the concepts of ER modeling, relational data models, and database architecture.	**2**	C
CO2	Apply relational algebra and SQL commands for database creation and data retrieval.	**3**	P
CO3	Understand ER-to-relational mapping and enforce integrity constraints in databases.	**2**	P
CO4	Apply normalization techniques to optimize relational database design.	**3**	P
CO5	Apply SQL and PL/SQL concepts to solve database problems.	**3**	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	2	2	-	-	-	-	2
CO-2	3	2	2	3	-	-	-	2
CO-3	3	2	2	3	-	-	-	2
CO-4	3	3	3	-	-	-	-	2
CO-5	3	3	3	3	-	-	-	2
PO Target	**3**	**2.4**	**2.4**	**3**	-	-	-	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Software Testing	**Course Code:** ID202L	**Faculty:** Dr. Neelam Rawat Mr. Rabi N. Panda Ms. Annu Yadav Dr. Shashank Bhardwaj

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Understand software testing concepts, principles, and the testing lifecycle.	**2**	C
CO2	Apply black-box and white-box testing techniques to validate software functionality.	**3**	P
CO3	Understand levels of testing and regression testing techniques for ensuring software quality.	**2**	P
CO4	Apply test management strategies, including test planning and risk analysis, to optimize the testing process.	**3**	P
CO5	Apply automation testing tools like Selenium for functional testing.	**3**	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	-	-	-	-	-	-	-
CO-2	3	2	2	-	-	-	-	2
CO-3	3	-	-	-	-	-	-	2
CO-4	3	-	-	-	-	-	-	2
CO-5	3	-	-	3	-	-	-	2
PO Target	**3**	**2**	**2**	**3**	-	-	-	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Cloud Computing	**Course Code:** CS204B	**Faculty:** Dr. Amit K. Gupta Ms. Shweta Mr. Apoorv Jain

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand cloud computing concepts, AWS global infrastructure, pricing models, and core services.	2	C
CO2	Describe AWS security measures, including Identity and Access Management (IAM), and establish secure virtual private clouds (VPC) using Amazon VPC.	3	P
CO3	Demonstrate the use of services like Amazon EC2, AWS Lambda, and AWS Elastic Beanstalk for deploying scalable applications.	2	P
CO4	Optimize AWS storage and database services, including Amazon S3, EBS, EFS, Glacier, RDS, and DynamoDB, for diverse use cases.	3	P
CO5	Design cost-efficient, reliable, and scalable cloud architecture using AWS principles, Elastic Load Balancing, CloudWatch, and Auto Scaling.	3	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	2	-	2	-	-	-	2
CO-2	2	3	-	3	-	-	2	-
CO-3	2	-	3	3	2	-	-	3
CO-4	3	2	3	3	-	-	-	3
CO-5	2	3	3	3	-	2	-	3
PO Target	2.4	2	3	2.3	2	2	2	2.75

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Introduction To AI	**Course Code:** AI101B	**Faculty:** Mr. Apoorv Jain Ms. Komal Salgotra

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Acquire the basic understanding of the fundamental concepts of artificial intelligence (AI) to implement search algorithms, and game playing strategies.	**2**	C
CO2	Illustrate the insights of data pre-processing techniques and its visualization.	**3**	P
CO3	Give a basic understanding of Machine Learning, NLP and computer vision to solve real-world problems.	**2**	C
CO4	Apply concepts of uncertainty in AI, decision-making frameworks, and reinforcement learning techniques to solve real-world problems.	**3**	P
CO5	Understand the fundamentals of ANN, Generative AI, ChatGPT, and AI ethics while exploring the future potential of AI applications.	**2**	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	-	3	2	2	-	1	2
CO-2	-	3	3	3	2	-	-	2
CO-3	3	3	3	3	3	-	2	3
CO-4	3	3	3	3	3	2	2	3
CO-5	3	-	3	2	3	-	3	3
PO Target	**3**	**3**	**3**	**2.6**	**2.6**	**2**	**2**	**2.6**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2024-25**	**Semester: 2nd Semester**
Course name: Quantitative Aptitude & Logical Reasoning-II	**Course Code:** HS201L	**Faculty:** Mr. Manish Gupta

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Analyze problems, identify relevant information, and apply appropriate mathematical methods to reach solutions.	2	C
CO2	Analyze tasks and activities by following a chain of thought process and find logical solutions to a problem.	3	P
CO3	Analyze trends, patterns, and relationships within the data.	2	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	2	-	-	-	-	-	1
CO-2	2	2	-	-	-	-	-	1
CO-3	1	1	-	-	-	-	-	1
PO Target	**1.7**	**1.7**	-	-	-	-	-	**1**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Mini Project-2 (Full Stack Development)	**Course Code:** ID201B	**Faculty:** Dr. Vipin Kumar Ms. Divya Singhal

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Develop the object-oriented programming concepts using Java.	**2**	C
CO2	Implement exception handling, file handling, and multi-threading in Java.	**3**	P
CO3	Apply new java features to build java programs.	**2**	P
CO4	Analyse java programs with Collection Framework.	**3**	P
CO5	Test web and RESTful Web Services with Spring Boot using Spring Framework concepts.	**3**	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	-	-	-	-	-	-	1
CO-2	1	-	-	-	-	-	-	1
CO-3	2	-	-	-	-	-	-	1
CO-4	3	-	-	-	-	-	-	2
CO-5	2	2	2	-	-	-	-	3
PO Target	**1.8**	**2**	**2**	-	-	-	-	**1.6**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2024-25	Semester: 2nd Semester
Course name: Campus to Corporate	Course Code: HS202B	Faculty: Ms. Ankita Banerjee Ms. Arunita Mukhopadhyay

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Construct an effective digital footprint using modern tools for an industry-ready social vitae.	2	C
CO2	Apply their effective communication skills and team dynamics in group discussions & interviews.	3	P
CO3	Verify their understanding of a variety of professional situations at the workplace.	2	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	-	-	1	-	2	-	1	2
CO-2	-	1	1	-	2	-	1	1
CO-3	-	1	1	-	1	-	1	1
PO Target	-	1	1	-	1.7	-	1	1.3

Signature of Course Coordinator

Signature of Addl. HoD

Signature of Dean

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3rd Semester
Course name: Analysis & Design of Algorithms	**Course Code:** CA205L	**Faculty:** Dr. Prashant Agrawal Ms. Shweta Ms. Hunny Gaur

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Determine algorithm characteristics using asymptotic notations and benchmarking.	3	C
CO2	Apply Divide and Conquer to design algorithms using suitable methods.	3	P
CO3	Illustrate efficient solutions using Greedy and Dynamic Programming, analyzing their trade-offs.	3	P
CO4	Analyze solutions for combinatorial problems using Backtracking and Branch & Bound techniques.	4	P
CO5	Classify problems using complexity classes and analyze lower bounds via reductions.	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	2	-	-	-	-	-	1
CO-2	3	3	3	-	2	-	-	2
CO-3	3	3	3	2	2	-	-	2
CO-4	3	3	3	1	-	-	-	2
CO-5	3	3	3	2	-	-	-	3
PO Target	3	2.8	3	1.67	2	-	-	2

Signature of Course Coordinator

Signature of Addl. HoD

Signature of Dean

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3rd Semester
Course name: Computer Networks Technologies	**Course Code:** CA103L	**Faculty:** Dr. Sachin Malhotra Ms. Shalika Ms. Annu Yadav

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand networking concepts and functionality of the physical layer.	2	C
CO2	Illustrate the concept of the elementary data link layer protocol to build a robust network	3	C
CO3	Apply the concept of routing and IP addressing in the network layer.	3	P
CO4	Demonstrate the usage and working of the transport layer.	3	C
CO5	Determine the performance of different protocols used at the application layer.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	1	-	-	-	-	-	1
CO-2	3	3	2	-	-	-	-	3
CO-3	3	3	2	-	-	-	-	3
CO-4	3	1	-	-	-	-	-	2
CO-5	3	2	-	-	-	-	-	2
PO Target	**3**	**2**	**2**	-	-	-	-	**2.2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3rd Semester
Course name: Web Development	**Course Code:** CA206B	**Faculty:** Dr. Vipin Kumar Ms. Anita Yadav

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Demonstrate frontend web application using React JS.	3	C
CO2	Illustrate navigation and hooks in front end web application using React Router and React Hooks Library	3	C
CO3	Apply React AXIOS Library to fetch RESTful API.	3	P
CO4	Analyse backend web apps using Node JS.	4	C
CO5	Test RESTful API using Node JS.	4	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	2	1	2	-	-	-	1
CO-2	2	2	2	2	-	-	-	2
CO-3	2	2	2	2	1	-	-	3
CO-4	1	2	1	2	1	-	-	1
CO-5	2	2	3	3	2	-	-	3
PO Target	**1.6**	**2**	**1.8**	**2.2**	**1.33**	**-**	**-**	**2**

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

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
An Autonomous Institute
Connecting Life with Learning
NAAC GRADE

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: Machine Learning and GenAI	**Course Code:** CA208E	**Faculty:** Dr. Neelam Rawat

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Understand ML and GenAI foundations and their lifecycle	2	C
CO2	Discuss supervised and unsupervised learning in GenAI-related scenarios	2	C
CO3	Explore neural networks and transformer models for generative tasks	2	C
CO4	Illustrate generative solutions using Autoencoders, GANs, and LLMs	3	C
CO5	Express ethical, explainable, and emerging trends in AI applications	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	-	-	1	-	-	-	-	1
CO-2	2	1	2	-	-	-	-	2
CO-3	2	2	3	-	-	-	-	2
CO-4	2	2	3	1	1	-	-	3
CO-5	1	1	1	-	2	-	2	1
PO Target	**1.75**	**1.5**	**2**	**1**	**1.5**	**-**	**2**	**1.8**

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

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
An Autonomous Institute
Connecting Life with Learning
NAAC GRADE

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: Data Analytics Essentials	**Course Code:** CA209E	**Faculty:** Mr. Saurabh Chaudhary

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the data analytics lifecycle and identify appropriate tools and techniques.	2	C
CO2	Describe data cleaning and pre-processing methods on real-world datasets.	2	C
CO3	Analyze data using modern BI and programming tools.	4	P
CO4	Apply basic machine learning models to solve practical problems.	3	P
CO5	Demonstrate end-to-end analytics with mini projects in selected domains.	3	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	2	2	-	3	-	2	-
CO-2	3	3	2	-	3	-	2	-
CO-3	3	3	2	2	3	-	2	2
CO-4	3	2	3	2	3	-	2	-
CO-5	3	3	3	2	3	-	3	3
PO Target	**3**	**2.6**	**2.4**	**2**	**3**	**-**	**2.2**	**1.5**

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

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
An Autonomous Institute
NAAC A GRADE
Connecting Life with Learning

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: UI/UX Design for Web Application	**Course Code:** CA211E	**Faculty:** Dr. Ankit Verma Ms. Vaishali Sisaudia

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand UI/UX principles and their importance in web and mobile applications.	2	C
CO2	Demonstrate wireframes, prototypes, and user flows for different applications.	3	C
CO3	Apply UI design principles for aesthetically pleasing and functional interfaces	3	P
CO4	Use industry-standard tools like Figma, Adobe XD, and Sketch for UI/UX design.	3	P
CO5	Analyze UX designs using usability testing methods & Work on real-world projects.	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	-	-	-	-	-	-	1
CO-2	3	2	-	-	-	-	2	1
CO-3	2	2	3	3	2	2	2	2
CO-4	2	2	2	2	1	1	3	3
CO-5	2	2	2	1	1	1	1	2
PO Target	**2.2**	**2**	**2.3**	**2**	**1.3**	**1.3**	**2**	**1.8**

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

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
An Autonomous Institute
Connecting Life with Learning
NAAC GRADE

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: Cloud-Native Development	**Course Code:** CA302E	**Faculty:** Dr. Shashank Bhardwaj

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the fundamental concepts of cloud computing and cloud-native development principles.	2	C
CO2	Demonstrate monolithic and microservices architectures.	3	C
CO3	Illustrate the importance of package management and containerization in modern software development.	3	C
CO4	Examine Kubernetes architecture and the role of automation in modern DevOps practices.	3	C
CO5	Explore cloud-based data storage solutions across different cloud platforms.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	1	-	-	-	-	-	1
CO-2	2	2	-	-	-	-	-	2
CO-3	2	-	-	1	-	-	-	2
CO-4	2	2	1	3	-	-	-	2
CO-5	2	-	2	3	-	-	-	3
PO Target	**1.8**	**1.67**	**1.5**	**2.3**	-	-	-	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3rd Semester
Course name: Analysis & Design of Algorithms Lab	**Course Code:** CA205P	**Faculty:** Dr. Prashant Agrawal Ms. Shweta Ms. Hunny Gaur

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Compute time and space complexity of algorithms using asymptotic analysis.	3	P
CO2	Apply Divide and Conquer strategy for recursive algorithms.	3	P
CO3	Solve optimization problems using Greedy and Dynamic Programming approaches	3	P
CO4	Demonstrate solutions to constraint-based problems using Backtracking and Branch & Bound.	3	P
CO5	Identify NP-Complete problems and simulate real-world cases using polynomial-time reductions	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	3	2	-	-	-	-	-	1
CO-2	3	3	3	-	2	-	-	2
CO-3	3	3	3	2	2	-	-	2
CO-4	3	3	3	1	-	-	-	2
CO-5	3	3	3	2	-	-	-	3
PO Target	**3**	**2.8**	**3**	**1.67**	**2**	**-**	**-**	**2**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: Major Project-I	**Course Code:** CA301P	**Faculty:** Ms. Shalika

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Illustrate the software development process using appropriate life cycle models	3	C
CO2	Demonstrate a Software Requirements Specification (SRS) based on problem understanding	3	P
CO3	Analyze suitable software design techniques to model the system architecture	4	P
CO4	Outline the core functionalities using an appropriate programming language	4	P
CO5	Evaluate the project outcomes through effective documentation and presentation	5	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	2	1		2		2	3
CO-2	1	3	3		2	1	2	3
CO-3	2	2	3	3	2	1	2	3
CO-4	2	-	1	3	2	1	2	3
CO-5	-	-		3	2	1	2	3
PO Target	**1.5**	**2.33**	**2**	**3**	**2**	**1**	**2**	**3**

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: Internship	**Course Code:** CA107P	**Faculty:** Ms. Vaishali Sisaudia

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Apply theoretical concepts and domain knowledge to solve practical problems in an industry or professional organization.	3	P
CO2	Demonstrate effective communication, collaboration, and teamwork in a real-world work environment.	3	P
CO3	Use appropriate tools, technologies, or methodologies relevant to the project or domain.	3	P
CO4	Show professionalism through ethical behavior, punctuality, and accountability during the internship period.	3	P
CO5	Documented structured reports and presentations based on internship experience and outcomes.	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	1	2	1		2		2	3
CO-2	1	3	3		2	1	2	3
CO-3	2	2	3	3	2	1	2	3
CO-4	2	-	1	3	2	1	2	3
CO-5	-	-		3	2	1	2	3
PO Target	**1.5**	**2.33**	**2**	**3**	**2**	**1**	**2**	**3**

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

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
An Autonomous Institute
Connecting Life with Learning
NAAC GRADE

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3rd Semester
Course name: Communication for Employability	**Course Code:** HS301B	**Faculty:** Ms. Ankita Banerjee Ms. Arunita Mukhopadhyay

Tagging COs with BLs & KCs			
CO No.	**Statement of Course Outcome**	**Bloom's Cognitive Process Level (BL)**	**Knowledge Category (KC)**
After completion of the course, the student will be able to			
CO1	Apply advanced verbal ability and communication strategies in real-time scenarios to demonstrate professional readiness.	3	P
CO2	Analyze various components of employability for effective participation and performance in the recruitment processes.	3	P
CO3	Evaluate workplace communication scenarios and behavioural responses to demonstrate professional competence.	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	-	1	-	-	2	-	-	1
CO-2	-	1	-	-	2	-	-	1
CO-3	-	-	-	-	2	-	-	2
PO Target	-	1	-	-	2	-	-	1.3

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

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
An Autonomous Institute
NAAC A+ GRADE
Connecting Life with Learning
www.kiet.edu
Delhi-NCR, Ghaziabad
Established: 1998

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	**Academic Session: 2025-26**	**Semester: 3rd Semester**
Course name: Data Science	**Course Code: CA210E**	**Faculty:**

Tagging COs with BLs & KCs

CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Understand the concept of data science and its scope, impact, and lifecycle in various real-world applications.	2	C
CO2	Apply Python programming skills to perform data manipulation, cleaning, and preprocessing using libraries like Pandas and NumPy.	3	P
CO3	Discuss exploratory data analysis (EDA) and various statistical methods to understand data patterns, distributions, and relationships.	3	P
CO4	Explore machine learning models using Python, including regression, classification, and clustering, with a focus on model evaluation metrics.	3	P
CO5	Demonstrate data science models using tools like Flask or FastAPI for real-time applications.	4	P

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	-	-	-	-	-	-	-
CO-2	1	2	2	2	-	-	-	-
CO-3	3	2	2	2	2	-	-	2
CO-4	2	3	-	2	2	-	-	2
CO-5	2	2	2	-	3	-	2	2
PO Target	**2**	**2.25**	**2**	**2**	**2.3**	**-**	**2**	**2**

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

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
An Autonomous Institute
Connecting Life with Learning
NAAC GRADE

DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3rd Semester
Course name: Cryptocurrency & Blockchain Applications	Course Code: CA106E	Faculty:

Tagging COs with BLs & KCs			
CO No.	Statement of Course Outcome	Bloom's Cognitive Process Level (BL)	Knowledge Category (KC)
After completion of the course, the student will be able to			
CO1	Explain the fundamental concepts of blockchain technology, its structure.	2	C
CO2	Explore cryptocurrency fundamentals and the role of hash functions in securing transactions.	2	C
CO3	Acquire knowledge of consensus mechanisms like PoW, PoS, and BFT.	3	C
CO4	Evaluate the creation, deployment, and interaction of smart contracts using Solidity.	3	P
CO5	Use of blockchain in supply chain, healthcare, education, and CBDC to enhance security and transparency.	3	C

Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	2	1	-	-	-	2	-	1
CO-2	2	-	-	2	-	2	-	2
CO-3	2	1	1	-	2	2	-	2
CO-4	1	2	1	1	1	1	-	1
CO-5	1	2	2	2	1	2	-	2
PO Target	1.6	1.5	1.3	1.67	1.3	1.8	-	1.6

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

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.