

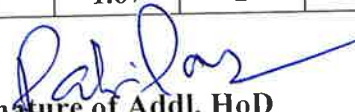
DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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: 3 rd 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


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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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

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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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


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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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


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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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


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DEPARTMENT OF COMPUTER APPLICATIONS


Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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


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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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


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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

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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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	File clear reports and deliver professional presentations documenting internship processes, insights, and outcomes	4	P

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	1	-	2
CO-2	-	2	1	-	3	2	1	2
CO-3	2	2	3	3	2	-	-	2
CO-4	-	-	-	-	2	1	3	2
CO-5	1	2	3	2	2	-	1	3
PO Target	2	2.25	2.25	2.33	2	1.33	1.67	2.2


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DEPARTMENT OF COMPUTER APPLICATIONS

Program Name: MCA	Academic Session: 2025-26	Semester: 3 rd 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



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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

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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

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