



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Application

Choice Based Credit System (CBCS) in the light of NEP-2020

MCA (Artificial Intelligence and Machine Learning)

SEMESTER-I (2026-28)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MCA101	AEC	Programming with C Language	Max	60	20	20	30	20	3	0	4	5
			Min	24	16		13.5	9				

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

1. To familiarize the students with programming and to encourage them to develop their logic.
2. To make students well versed with C language to solve problems efficiently.
3. Using simple and well drawn illustrations develop their programming skills using modular programming.
4. To make the students well versed with the knowledge of pointer and structure.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)** and **SDG 9 (Industry, Innovation and Infrastructure)**.

COURSE OUTCOMES:

After completion of the course, the student will be able to:

- CO1** Develop algorithms for problems.
- CO2** Apply the programming concepts to solve the given problems.
- CO3** Write the programs using modular programming.
- CO4** Write the programs using pointers and to manage memory.

TEACHING PEDAGOGY:

- T1** Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching
- T2** ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

- ATL1** Quiz
- ATL2** Activity Based Learning
- ATL3** Midterm Exams
- ATL4** Flip Class
- ATL5** Seminar Presentation
- ATL6** Assignments

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ATL7 Poster

ATL8 Oral Viva-voce examination

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	Concept of problem solving , Problem definition, Flowcharting, Decision table, Algorithm. Characteristics of a good program - accuracy, simplicity, robustness, portability, minimum resource and time requirement, modularization; Categories of Programming Languages, Programming Paradigms: monolithic, Procedural, structured, Non Procedural. Type of errors in programming.	9	ATL1 ATL3 ATL6
II	Overview of C: Features of C, Structure of C program. Elements of C: C character set, identifiers and keywords, data types: primitive and user defined. Operators and Expressions, Type modifiers and type casting. Control Structures. Input/ Output: Unformatted and Formatted I/O functions in C.	9	ATL3 ATL6
III	Functions: Definition, prototype, Function call, parameters passing – call by value and call by reference. Return value. Storage Classes in C: auto, extern, register and static, their scope, Recursion, Recursion v/s Iteration, types of recursion. Special constructs – Break, continue, exit(), goto and labels. Arrays: Definition, Access of Elements, initialization; Multidimensional arrays, character arrays.	9	ATL6
IV	Pointer: address and dereferencing operators, declaration, assignment, initialization. pointer to pointer. pointer and arrays, Array of pointers and its limitation, Function returning pointers; Pointer to function, Function as parameter. Dynamic memory management using functions like malloc(), calloc(), realloc(), free() etc. Structure: Structure –basic, declaration, membership operator, structure within structure, array in structure, array of structure.	9	ATL3 ATL6
V	Pre-processor directives: #include, #define, #undef, #if, #ifdef, #ifndef, #else, #elif, #endif, #error, #pragma. Predefined macros. Command line	9	ATL6

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	arguments. Variable argument list functions.		
	Total Hours	45	

SUGGESTED READINGS:

Textbooks

1. Kanitkar Yashwant, Let us C", Edition 16th 2017, BPB, New-Delhi.
2. Bala Guruswami, Ansi C, McGraw Hill Education; Eighth edition 2019, TMH, New-Delhi.
3. Kernighan & Ritchie "The C programming language", Pearson Education India; 2 edition (2015), PHI.
4. Schildt "C: The Complete reference" McGraw Hill Education; 4th ed TMH, 2017.
5. Byron S. Gottfried, "Programming with C", Schaum's Outline Series McGraw –Hill, II-Ed.
6. Concepts of Programming Languages Robert.W. Sebesta 8/e, Pearson Education, 2008.
7. Programming Language Design Concepts, D. A. Watt, Wiley dreamtech, rp-2007.

Suggested e- resources (Websites/e- books)

- 1 <https://www.learn-c.org>
- 2 <https://www.programiz.com/c-programming/online-compiler/>

LIST OF PRACTICAL

	Title	CO Mapping
1.	Define an algorithm and flowchart. Draw algorithm and flow chart for a program that converts an input Fahrenheit degree into Celsius equivalent.	CO1
2.	Write an algorithm and a C program to find the greatest among three numbers.	CO1
3.	WAP to print an input string in lower case, upper case and mixed case using library function.	CO1
4.	WAP a C program to reserve an input number.	CO2
5.	Draw a flow chart to find prime number from 1 to 100.	CO2
6.	Write a C program to obtain the sum of first n terms of the following series: $X - X^3/3! + X^5/5! - X^7/7! + \dots$	CO2
7.	WAP to calculate factorial of a number using different loops.	CO2
8.	WAP to calculate factorial of a number using recursion.	CO2

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9.	WAP in C to generate Fibonacci series.	CO3
10.	WAP in C to generate Pascal triangle.	CO3
11.	WAP in C to swap value and address of two variables.	CO3
12.	WAP in C to search a given element in an array using linear and binary search.	CO3
13.	WAP to sort an integer array in ascending and descending order according to user's choice.	CO4
14.	Write a menu driven program to perform matrix addition, subtraction and multiplication.	CO4
15.	Write a program to sum diagonal elements of two matrices.	CO4
16.	WAP a C program to reverse a string by recursion.	CO4
17.	WAP using structure in C to generate student mark-sheet for 3 students with student details name, course, and semester and with marks in 5 subjects, assume max mark in each subject as 100 and passing marks as 35.	CO4

COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	2	1	1	–	–	–	–	–	–	2			
CO2	3	3	2	1	2	–	–	–	–	–	–	2			
CO3	3	2	3	1	2	–	–	–	1	1	–	2			
CO4	3	3	2	1	2	–	–	–	–	–	–	2			

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MCA102	DCC	Computer Organization and Design	Max	60	20	20	0	0	3	1	0	4
			Min									

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COURSE OBJECTIVES:

The student will have ability to:

1. To create basic understanding of Computer System Organization.
2. To understand basic concept of Computer System architecture.
3. To understand internal working, structuring, and implementation of a computer system.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)** and **SDG 9 (Industry, Innovation and Infrastructure)**.

COURSE OUTCOMES:

After completion of the course, the student will be able to:

- CO1** To understand computer organization structure and behaviour of a computer system.
- CO2** To understand how exactly all the units in the system are arranged and interconnected.
- CO3** To understand functionalities of a Computer System Architecture in terms of instructions, addressing modes and registers.
- CO4** To understand internal working, structuring, and implementation of a computer system.

TEACHING PEDAGOGY:

- T1** Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching
- T2** ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

- ATL1** Quiz
- ATL2** Activity Based Learning
- ATL3** Midterm Exams
- ATL4** Flip Class

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ATL5	Seminar Presentation
ATL6	Assignments
ATL7	Poster
ATL8	Oral Viva-voce examination

PREREQUISITES:

Basic Computer Knowledge

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	Digital Computer and it types, Configuration (functional units) of Computer System, basic operational concepts, Capabilities, Limitations and applications of computers. Introduction of Number Systems like Binary, Octal and Hexadecimal number systems, Character Codes (BCD, ASCII, EBCDIC).	12	ATL1 ATL2 ATL6
II	Instruction formats, Instruction Cycle, Organization of Central Processing Unit, Hardwired & micro programmed control unit, Single Organization, General Register Organization, Addressing modes, data transfer & Manipulation, I/O Organization, Bus Architecture. Digital logic circuits: digital computer Logic gates, Boolean Algebra and its examples, K-map simplification.	12	ATL3 ATL6
III	Combinational circuit: Half Adder, Full Adder, concept of Flip-Flop. Digital components: integrated circuits, Decoders, Encoders, Multiplexer, De-multiplexers, Registers, Counters (synchronous & asynchronous), ALU, Micro Operation.	12	ATL6
IV	Memory Organization: introduction to Memory units, memory Hierarchy design and its characteristics, types of main memory (RAM/ROM chips), types of RAM and ROM, Auxiliary memory (Hard Disk Drive), Associative memory, Cache memory, Virtual	12	ATL2 ATL6

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	Memory.		
V	Peripheral devices, I/O interface, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input- Output Processor and Serial Communication. I/O Controllers, Asynchronous data transfer. Concept of 8-bit micro Processor (8085) and 16-bit Micro Processor (8086).	12	ATL6
	Total Hours	60	

ADDITIONAL RESOURCES

1. John P. Hayes, Computer Architecture and Organization, Third Edition, Tata McGraw Hill, 2012.
2. John L. Hennessey and David A. Patterson, Computer Architecture – A Quantitative Approach, Morgan Kaufmann / Elsevier Publishers, Fifth Edition, 2012.
3. William Stallings, Computer Organization and Architecture – Designing for Performance, Eighth Edition, Pearson Education, 2010.

SUGGESTED READINGS:

Textbooks

1. David Patterson and John Hennessy, Computer Organization and Design: The Hardware/Software Interface, RISC-V Edition, Morgan Kaufmann / Elsevier, 13th April 2017.
2. Stallings, Computer Organization & Architecture :Designing for performance, Tenth Edition, Pearson Education, 2016.
3. Carl Hamacher, Zvonko Vranesic, Safwat Zaky and Naraig Manjikian, Computer Organization and Embedded Systems, Sixth Edition, Tata McGraw Hill, 2012.

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Course Outcomes	Correlation with POs												Correlation with PSOs		
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CO2	3	2	2	1	2	-	-	-	-	1	-	2			
CO3	3	3	2	2	2	-	-	-	-	1	-	2			
CO4	3	3	3	2	2	-	-	-	1	1	1	2			

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MCA103	SEC	Internet Web Programming	Max	60	20	20	30	20	3	0	4	5
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COURSE OBJECTIVES:

The student will have ability to:

1. Provide an introduction to the fundamental concepts of HTML, CSS, XML, Javascript
2. Learn CSS Grid Layout
3. Develop basic programming skills using Javascript
4. Develop skills in analyzing the usability of a website.
5. Understand the principles of creating an effective Web Page.

COURSE ALIGNMENT WITH UNSDG:

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COURSE OUTCOMES:

After completion of the course, the student will be able to:

- CO1** Develop algorithms for problems.
- CO2** Define the basics of JavaScript.
- CO3** Visualize the basic concept of HTML.
- CO4** Recognize the elements of HTML.
- CO5** Introduce basics concept of CSS.
- CO6** Develop the concept of XML, XSLT, DTD and XPath.

TEACHING PEDAGOGY:

- T1** Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching
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ATL6 Assignments

ATL7 Poster

ATL8 Oral Viva-voce examination

PREREQUISITES:

Basic Computer Knowledge

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	Java Methodology: Classes, Objects, Method, Inheritance, Packages, Abstract Classes, Interfaces, Exception Handling, A brief introduction to Applets.	9	ATL3 ATL5 ATL6
II	HTML: Introduction to HTML, HTML Documents structure tags, Text Formatting Tags, Inserting Special Characters, Anchor Tags, List Tags, Tables, Frames and Floating Frames, Developing Forms, Adding Images and Sound.	9	ATL1 ATL6
III	CSS: Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables.	9	ATL2
IV	XML: Creating XML documents, overview of working with elements and attributes	9	ATL2 ATL6
V	JavaScript: Introduction to JavaScript, Identifier and Operator, Control Structure, Functions DOM, Numbers and String Functions, Arrays and Event handling in JavaScript, Bootstrapping.	9	ATL2 ATL6
Total Hours		45	

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Choice Based Credit System (CBCS) in the light of NEP-2020

MCA (Artificial Intelligence and Machine Learning)

SEMESTER-I (2026-28)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MCA103	SEC	Internet Web Programming	Max	60	20	20	30	20	3	0	4	5
			Min									

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

SUGGESTED READINGS:

Textbooks

1. Jennifer Robbins ,”Learning Web Design:A beginner’s guide to HTML, CSS, Javascript and Web Graphics”, 5th Edition,Oreilly,2018
2. Doug Tidwell, ”XSLT: Mastering XML Transformations”,2nd Edition, Oreilly, June 2009
3. Jon Duckett,”Javascript and JQuery:Interactive Front-End Web Development”,1stEdition,Wiley,July 2014

Suggested e- resources (Websites/e- books)

- 1 <https://naoshekpam.wordpress.com/>

LIST OF PRACTICAL

	Title	CO Mapping
1.	Develop a webpage using Form tag.	CO1
2.	Develop a webpage using different HTML tags.	CO1
3.	Develop a webpage using Table tag.	CO1
4.	Develop a webpage using Frame tag	CO2
5.	Develop a static website using HTML tags.	CO2,3
6.	Creating XML documents	CO2,3
7.	Creating DTD to validate XML documents.	CO3
8.	Creating XSLT Stylesheet for formatting data.	CO5
9.	Develop a Javascript Form.	CO3
10.	Creating a Javascript POPUP Message.	CO5
11.	Change Link colors using CSS	CO5
12.	Create a TextBox using CSS	CO5
13.	Center-Align elements using CSS	CO6

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COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	2	1	2	–	–	–	–	–	–	1			
CO2	2	2	2	–	3	–	–	–	–	1	–	1			
CO3	2	1	2	–	3	–	–	–	–	1	–	1			
CO4	2	1	2	–	3	–	–	–	–	1	–	1			
CO5	2	1	3	–	3	–	–	–	–	1	–	1			
CO6	2	2	2	1	3	–	–	–	–	1	–	2			

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				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
MCA203	DCC	Data Base Management System	Max	60	20	20	30	20	3	0	2	4
			Min	24	16		13.5	9				

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

- To provide students with basic concepts in information system and the benefits of these systems
- To provide the knowledge of systems definition, systems requirements and information needed by the decision maker
- To understand the role, requirement and operations that an analyst needed to analyse, design, and implement the systems Develop skills in analysing the usability of a website.
- To identify several methods to enhance and develop information systems and to manage the information system recourses.
- To explain several ethical issues in information system.
- To provide the knowledge of business data modelling for the designing of efficient information systems.
- To explain the various issues related with Data Security.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)** and **SDG 9 (Industry, Innovation and Infrastructure)**.

COURSE OUTCOMES:

After completion of the course, the student will be able to:

- CO1** To differentiate between data, information, and knowledge.
- CO2** Create, maintain and manipulate a relational database using SQL.
- CO3** Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modelling, designing, and implementing an information system.
- CO4** Describe the characteristics of database transactions.
- CO5** Understand the transaction processing system and functional area information system.
- CO6** To design the efficient database system using normalization.

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TEACHING PEDAGOGY:

- T1** Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching
T2 ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

- ATL1** Quiz
ATL2 Activity Based Learning
ATL3 Midterm Exams
ATL4 Flip Class
ATL5 Seminar Presentation
ATL6 Assignments
ATL7 Poster
ATL8 Oral Viva-voce examination

PREREQUISITES:

Basic Computer Knowledge

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	Introduction: Introduction to Databases and Transactions, Purpose of Database System- Database System, Database system Vs file system, Database System concepts and architecture, Advantage of DBMS approach, various view of data, data independence, schema and subschema and instances, primary Database languages, Database administrator and users, data dictionary.	9	ATL3 ATL6 ATL 3 ATL6
II	Concepts of data models, ER model: basic concepts, notation for ER diagram,	9	ATL3

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	design issues, mapping constraint, Concepts of keys: super, candidate, primary, alternate, foreign, weak and strong entity sets, specialization and generalization, aggregation, inheritance, design of ER schema, reduction of ER schema to tables, reduction of ER diagrams to tables, extended ER model, relationships of higher degree.		ATL6
III	Relational data Model and Language: Relational Algebra: concepts, domains, relations, kind of relations, relational database, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, The structure, relational algebra with extended operations, modifications of Database. Relational Calculus: idea of relational calculus, tuple and domain calculus, Domain relational Calculus, calculus Vs algebra, computational capabilities.	9	ATL3 ATL5 ATL6
IV	Relational Database Design: basic concepts and definitions, trivial and non-trivial dependencies, closure set of dependencies and of attributes, irreducible set of dependencies, Canonical Cover. Normalization: Introduction, non-loss decomposition, FD diagram, first, second, third Normal forms, dependency preservation, BCNF, multi valued dependencies and fourth normal form, Join dependency and fifth normal form. Codd's rules, Relational Schemas, Introduction to UML, Alternative approaches to database design.	9	ATL3 ATL6
V	SQL: Introduction, basic structure of SQL, Characteristics and Advantage of SQL set operations, aggregate functions, null values, SQL data types and literals. SQL operators, Types of SQL commands. Nested sub queries, derived relations, modification of Database, Aggregate functions. Insert, update and delete operations. Triggers in SQL. Views: Introduction to views, data independence, security, updates on views, comparison between tables and views Distributed Database: basic idea, distributed data storage. Concepts of Transaction, concurrency and Recovery: basic concepts, ACID properties, Transaction states, Implementation of atomicity and durability, concurrent executions.	9	ATL6
Total Hours			45

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Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; *Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

SUGGESTED READINGS:

Textbooks

1. A Silberschatz, H.F Korth, Sudersan, "Database System Concepts", 6th Edition, MGH Publication 2013.
2. C.J. Date, "An introduction to Database Systems", 6th Edition, Pearson 2003.
3. Elmasri & Navathe, "Fundamentals of Database systems", 7th Edition, Pearson 2015.
4. B.C. Desai, "An introduction to Database systems", BPB.
5. Raghu Ramakrishnan, "Database Management Systems", 3rd Edition, TMH 2014.

Suggested e- resources (Websites/e- books)

1. <https://ebooks.schandgroup.com/>
2. <https://www.geeksforgeeks.org/dbms/dbms/>

LIST OF PRACTICAL

	Title	CO Mapping
1.	To study Basic SQL commands (create database, create table, use, drop, insert) and execute the following queries using these commands: • Create a database named ' Employee'. • Use the database 'Employee' and create a table 'Emp' with attributes 'ename', 'ecity', 'salary', 'enumber', 'eaddress', 'deptname'. • Create another table 'Company' with attributes 'cname', 'ccity', 'empnumber' in the database 'Employee'.	CO2
2.	To study the viewing commands (select , update) and execute the following queries using these commands: • Find the names of all employees who live in Delhi. • Increase the salary of all employees by Rs. 5,000. • Find the company names where the number of employees is greater than 10,000. • Change the Company City to Gurgaon where the Company name is 'TCS'.	CO2,3
3.	To study the commands to modify the structure of table (alter, delete) and execute the following queries using these commands: • Add an attribute named ' Designation' to the table 'Emp'. •	CO5

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	Modify the table 'Emp', Change the datatype of 'salary' attribute to float. • Drop the attribute 'deptname' from the table 'emp'. • Delete the entries from the table 'Company' where the number of employees are less than 500.	
4.	To use (and, or, in , not in, between , not between , like , not like) in compound conditions and execute the following queries using them: • Find the names of all employees who live in 'Gurgaon' and whose salary is between Rs. 20,000 and Rs. 30,000. • Find the names of all employees whose names begin with either letter 'A' or 'B'. • Find the company names where the company city is 'Delhi' and the number of employees is not between 5000 and 10,000. • Find the names of all companies that do not end with letter 'A'.	CO3
5.	Using aggregate functions execute the following queries: • Find the sum and average of salaries of all employees in computer science department. • Find the number of all employees who live in Delhi. • Find the maximum and the minimum salary in the HR department.	CO2
6.	. To execute the following queries using study the grouping commands (group by, order by) List all employee names in descending order. • Find number of employees in each department where number of employees is greater than 5. • List all the department names where average salary of a department is Rs.10,000.	CO 3
7.	To write SQL queries Alter table 'Emp' and make 'enumber' as the primary key. • Alter table 'Company' and add the foreign key constraint. • Add a check constraint in the table 'Emp' such that salary has the value between 0 and Rs.1,00,000. • Alter table 'Company' and add unique constraint to column cname. • Add a default constraint to column ccity of table company with the value 'Delhi'. • Rename the name of database to 'Employee1'. • Rename the name of table 'Emp' to 'Emp1'. • Change the name of the attribute 'ename' to 'empname'.	CO3
8.	. To execute following queries using appropriate Retrieve the complete record of an employee and its company from both the table using joins. • List all the employees working in the company 'TCS'.	CO4
9.	To study the various set operations and execute the following queries using these commands: • List the enumber of all employees who live in Delhi and whose company is in Gurgaon or if both conditions are true. • List the enumber of all employees who live in Delhi but whose company is not in Gurgaon.	CO3,4

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10.	To study the various scalar functions and string functions (power, square, substring, reverse, upper, lower, concatenation) and execute the following queries using these commands: • Reverse the names of all employees. • Change the names of company cities to uppercase. To study the various scalar functions and string functions (power, square, substring, reverse, upper, lower, concatenation) and execute the following queries using these commands: • Reverse the names of all employees. • Change the names of company cities to uppercase.	CO3
11.	To study the commands for views and execute the following queries using these commands: • Create a view having ename and ecity. • In the above view change the ecity to 'Delhi' where ename is 'John'. • Create a view having attributes from both the tables. • Update the above view and increase the salary of all employees of IT department by Rs.1000.	CO4
12.	To study the commands involving indexes and executes the following queries: • Create an index with attribute ename on the table employee. • Create a composite index with attributes cname and ccity on table, company. • Drop all indexes created on table, company.	CO3

COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	-	-	-	-	-	-	1	-	2			
CO2	3	3	2	2	3	-	-	-	1	1	1	2			
CO3	3	3	3	2	3	-	-	-	1	2	2	2			
CO4	2	2	1	2	2	-	-	-	-	1	1	2			
CO5	2	2	2	1	2	1	-	-	1	1	2	2			
CO6	3	3	3	2	3	-	-	-	-	1	1	2			

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