

TECNIA INSTITUTE OF ADVANCED STUDIES

GRADE 'A' INSTITUTE

Department of Information Communication & Technology

COURSE PLAN

ACADEMIC SESSION 2024-25

As per Scheme & Syllabus (w.e.f. Academic Session 2024-2025 onwards); As per UGC Curriculum & Credit Framework for Undergraduate Programme (CCFUP) (Dec 2022) Guru Gobind Singh Indraprastha University, New Delhi.

PROGRAMME CODE:	020	PROGRAMME:	Bachelor of Computer Applications (BCA)	SHIFT:	1st and 2nd	L	4	T/P	0	Credits	4
COURSE CODE :	BCA-102TH	COURSE NAME:	Database Management System	SECTION:	A and B						
		COURSE TYPE:	Core Course Theory (CCT)	FACULTY:	Mr. Gaurav Singh Rawat						

LEARNING OBJECTIVES:
 This course will provide the learners the following:-
 1. Understanding of the requirement of database management System for storing data and its advantages over file management system.
 2. Designing the database conceptually, physically and finally implementing the creation of database for any application.
 3. Learning of queries in SQL for creating database and performing various operations for manipulating data in the database.
 4. Knowledge of database utilities i.e. backup, recovery, transaction processing.

PREREQUISITE: None

		COURSE OUTCOME & MAPPING, COURSE ARTICULATION									
		DISCIPLINARY KNOWLEDGE: Disciplinary Knowledge: Apply the knowledge of computer application concepts and domain knowledge to solve the problems in IT domain/IT industry	PROBLEM ANALYSIS: Identify, formulate, review research literature, and analyse complex computer application problem at their workplace and for the society.	DESIGN /DEVELOPMENT OF SOLUTIONS:Design and evaluate solutions for computer applications problems, and design the processes that meet specified needs with appropriate consideration for the public health, safety, cultural, societal, and environmental considerations.	MODERN TOOL USAGE: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computer application activities, with an understanding of the limitations	PROFESSIONAL ETHICS: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.	LIFE-LONG LEARNING: Recognize the need, and have the ability, to engage in independent learning for continuous development as a computing professional.	PROJECT MANAGEMENT AND FINANCE: Demonstrate knowledge and understanding of the computing and manage projects and in multidisciplinary environments.	COMMUNICATION EFFICACY WITH COOPERATION/TEAMWORK: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions. Function effectively as an individual and as a member or a leader.	SOCIETAL AND ENVIRONMENTAL CONCERN: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing	INNOVATION AND ENTREPRENEURSHIP: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.
CO - PO MAPPING		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies	4	4	4	2	-	2	1	-	-	2
CO2	Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL	4	4	4	2	-	2	1	-	-	2
CO3	Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization	4	4	4	2	-	2	1	-	-	2
CO4	Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security.	4	4	4	2	-	2	1	-	-	2
Course Articulation (Average)		4	4	4	2	-	2	1	-	-	2

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Dr. Rajesh Kumar
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S. No.	Lecture No.	Unit No.	Topic	Sessional Objective Students will able to:	Experiential Learning	Participative Learning	Problem Solving Methodologies	ICT Tools & E-Resources Utilization	Mapping with CO	Class Material (PPT Faculty/Students)	Additional Material (Links/ Journals/ Articles/ NEWS)	Mode of Assessment	Status
1	L1	1	A. Overview Of Database Management System	An Overview Of Database Management System	Discussion	Lecture through PPT	Brainstorming	PPT	CO1	PPT	https://www.youtube.com/watch?v=0W0K8v050e0	VIVA	
2	L2	1	Characteristics Of Database Approach	Characteristics Of Database Approach		Lecture through PPT		PPT	CO1	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
3	L3	1	Database System Architecture – Levels, Mapping	Database System Architecture – Levels, Mapping	Discussion	Lecture through PPT		PPT	CO1	PPT	https://www.youtube.com/watch?v=AA02q8R6u84		
4	L4	1	Database Management System, Characteristics, Levels, Mapping/Tutorials Of L1, L2, L3	Database Management System, Characteristics, Levels, Mapping/Tutorials Of L1, L2, L3	Discussion/ Doubt Clearing session								
5	L5	1	Client/Server, Data Model	Client/Server, Data Model	Flipped Classroom		Brainstorming	PPT	CO1	PPT	https://www.youtube.com/watch?v=12009v050e0	Student PPT	
6	L6	1	Introduction To Distributed Data Processing	Introduction To Distributed Data Processing	Flipped Classroom		Discussion	PPT	CO1	PPT	https://www.researchgate.net/publication/320201861/D0_Altv		
7	L7	1	Schema And Instances, Data Independence	Schema And Instances, Data Independence		Lecture through PPT		PPT	CO1	PPT	https://www.youtube.com/watch?v=0500M50e0e0	Question Bank	
8	L8	1	Client/Server Model, Distributed Data Processing, Schema, Instance/Tutorials Of L4, L5, L6	Client/Server Model, Distributed Data Processing, Schema, Instance/Tutorials Of L4, L5, L6	Discussion/ Doubt Clearing session							Assessment	
9	L9	1	Basic Introduction About Entity	Basic Introduction About Entity	Role Play on Entity Set	Lecture through PPT		PPT	CO1	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
10	L10	1	Entity Types, Entity Set, Weak Entities	Entity Types, Entity Set, Weak Entities		Lecture through PPT		PPT	CO1, CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
11	L11	1	Notation For Er Diagram	Notation For Er Diagram		Lecture through PPT	Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
12	L12	1	Entity Types, Sets, Weak Entities Er Diagram/Tutorials Of L7, L8, L9	Entity Types, Sets, Weak Entities Er Diagram/Tutorials Of L7, L8, L9	Discussion/ Doubt Clearing session								
13	L13	1	Attributes And Keys	Attributes And Keys		Lecture through PPT	Practical	PPT	CO1	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
14	L14	1	Relationships, Relation Types	Relationships, Relation Types	Flipped Classroom			PPT	CO1, CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0	Student PPT	
15	L15	1	Enhanced 1-R Model	Enhanced E-R Model		Lecture through PPT		PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
16	L16	1	Attributes, Keys, Relationships, Er Model/Tutorials Of L10, L11, L12	Attributes, Keys, Relationships, Er Model/Tutorials Of L10, L11, L12	Discussion/ Doubt Clearing session								
17	L17	1	Specialization And Generalization	Specialization And Generalization		Flipped Classroom	Discussion	PPT	CO1	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
18	L18	2	Introduction To Sql, Overview, Characteristics Of Sql, Advantage Of Sql	Introduction To Sql, Overview, Characteristics Of Sql, Advantage Of Sql	Mini Projects	Lecture through PPT	Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0	VIVA	
19	L19	2	Sql Data Types And Literals	Sql Data Types And Literals		Lecture through PPT	Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
20	L20	2	Specialization, Generalization, Sql, Sql Literals/Tutorials Of L13, L14, L15	Specialization, Generalization, Sql, Sql Literals/Tutorials Of L13, L14, L15	Discussion/ Doubt Clearing session								
21	L21	2	Types Of Sql Commands Ddl	Types Of Sql Commands Ddl			Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
22	L22	2	Types Of Sql Commands Dml	Types Of Sql Commands Dml			Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
23	L23	2	Types Of Sql Commands Dcl	Types Of Sql Commands Dcl			Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
24	L24	2	Sql Commands Add, Dml, Dcl/Tutorials Of L16, L17, L18	Sql Commands Ddl, Dml, Dcl/Tutorials Of L16, L17, L18	Discussion/ Doubt Clearing session								
25	L25	2	Basic Sql Queries	Basic Sql Queries			Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0		
26	L26	2	Logical Operators Between, In, And, Or And Not	Logical Operators: Between, In, And, Or And Not	Discussion	Lecture through PPT	Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=0500M50e0e0	VIVA and Presentation	
27	L27	2	Null Values: Disallowing Null Values, Comparison Using Null Values	Null Values: Disallowing Null Values, Comparison Using Null Values	Discussion	Lecture through PPT	Practical	PPT	CO2	PPT			
28	L28	2	Sql Queries, Logical Operators, Null Values/Tutorials Of L19, L20, L21	Sql Queries, Logical Operators, Null Values/Tutorials Of L19, L20, L21	Discussion/ Doubt Clearing session								
29	L29	2	Integrity Constraints: Primary Key, Not Null, Unique, Check, Referential Key	Integrity Constraints: Primary Key, Not Null, Unique, Check, Referential Key	Mini Projects		Practical	PPT	CO2	PPT	http://www.infocoll.com/education/wh/queries/primarykey/primarykey.htm		
30	L30	2	Introduction To Nested Queries, Correlated Nested Queries	Introduction To Nested Queries, Correlated Nested Queries	Mini Projects		Practical	PPT	CO2	PPT			
31	L31	2	Set-Comparison Operators, Aggregate Operators: The Group By And Having Clauses	Set-Comparison Operators, Aggregate Operators: The Group By And Having Clauses	Mini Projects		Practical	PPT	CO2	PPT			
32	L32	2	Keys, Nested Queries, Comparison Operators, Aggregate Operators/Tutorials Of L22, L23, L24	Keys, Nested Queries, Comparison Operators, Aggregate Operators/Tutorials Of L22, L23, L24	Discussion/ Doubt Clearing session								

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33	L33	2	Join: Inner Join, Outer Join	Join: Inner Join, Outer Join	Mini Project	Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=AK90J1Qs1e	
34	L34	2	Left Outer, Right Outer, Full Outer Join	Left Outer, Right Outer, Full Outer Join	Mini Project	Practical	PPT	CO2	PPT	https://www.youtube.com/watch?v=AO92P0V0t8c	
35	L35	2	Overview Of Other Sql Objects: Views, Synonyms	Overview Of Other Sql Objects: Views, Synonyms	Mini Project	Practical	PPT	CO2	PPT		
36	L36	2	Views, Views, Sequences(Tutorials Of 1.25,1.26,1.27)	Views, Views, Sequences(Tutorials Of 1.25,1.26,1.27)	Discussion/ Doubt Clearing session						
37	L37	2	Indexes, Triggers And Stored Procedures	Indexes, Triggers And Stored Procedures	Mini Project	Practical	PPT	CO2	PPT	https://www.infobuild.com/information/lead-9-video-courses/computer-science/DatabaseDesign-IT-Module/lecture-18.html	
38	L38	3	Relational Model Terminology: Domains	Relational Model Terminology: Domains	Role Play on Relational Model	Lecture through PPT		CO3	PPT	https://www.youtube.com/watch?v=055uq23kkE	VIVA and Presentation
39	L39	3	Attributes, Tuples, Relations	Attributes, Tuples, Relations		Lecture through PPT		CO2,CO3	PPT	https://www.youtube.com/watch?v=64u4U7Hk4t0	
40	L40	3	Indexes, Triggers, Relational Model, Attributes, Tuples, Relations(Tutorials Of 1.28,1.29,1.30)	Indexes, Triggers, Relational Model, Attributes, Tuples, Relations(Tutorials Of 1.28,1.29,1.30)	Discussion/ Doubt Clearing session						
41	L41	3	Characteristics Of Relations, Relational Constraints, Domain Constraints	Characteristics Of Relations, Relational Constraints, Domain Constraints		Lecture through PPT		CO3	PPT	https://www.youtube.com/watch?v=64u4U7Hk4t0	
42	L42	3	Key Constraints And Constraints On Null	Key Constraints And Constraints On Null	Demonstration	Lecture through PPT	Practical	CO3	PPT		
43	L43	3	Codd'S Rules	Codd'S Rules	Mini Project	Lecture through PPT		CO3	PPT		
44	L44	3	Constraints,Codd'S Rules(Tutorials Of L31,L32,L33)	Constraints,Codd'S Rules(Tutorials Of L31,L32,L33)	Discussion/ Doubt Clearing session						
45	L45	3	Basic Operations Selection And Projection	Basic Operations Selection And Projection		Lecture through PPT	Practical	CO3	PPT	https://www.youtube.com/watch?v=3h8mQ2y8t0	
46	L46	3	Union, Intersection,Set Difference And Division	Union, Intersection,Set Difference And Division		Lecture through PPT	Practical	CO3	PPT		VIVA
47	L47	3	Steps To Map Er Diagram To Relational Schema	Steps To Map Er Diagram To Relational Schema		Lecture through PPT	Practical	CO3	PPT		
48	L48	3	Selection,Projection,Union,Intersection,Er Diagram(Tutorials Of 1.34,L35,1.36)	Selection,Projection,Union,Intersection,Er Diagram(Tutorials Of 1.34,L35,1.36)	Discussion/ Doubt Clearing session						
49	L49	3	Functional Dependencies	Functional Dependencies	Demonstration	Lecture through PPT		CO3	PPT		
50	L50	3	Armstrong'S Inference Rule	Armstrong'S Inference Rule		Lecture through PPT		CO3	PPT		
51	L51	3	Normalization - 1NF, 2NF	Normalization - 1NF, 2NF	Demonstration	Lecture through PPT		CO3	PPT	https://www.infobuild.com/information/lead-9-video-courses/computer-science/DatabaseDesign-IT-Module/lecture-19.html	
52	L52	3	Functional Dependencies,Armstrong'S Inference Rule,1NF,2NF(Tutorials Of L37,L38,L39)	Functional Dependencies,Armstrong'S Inference Rule,1NF,2NF(Tutorials Of L37,L38,L39)	Discussion/ Doubt Clearing session						
53	L53	3	Normalization (3 rd Normal Form)	Normalization (3 rd Normal Form)	Demonstration	Lecture through PPT		CO3	PPT	https://www.infobuild.com/information/lead-9-video-courses/computer-science/DatabaseDesign-IT-Module/lecture-20.html	
54	L54	4	Definition Of Transaction, Desirable Acid Properties	Definition Of Transaction, Desirable Acid Properties	Flipped Classroom	Lecture through PPT	Discussion	CO4	PPT	https://www.youtube.com/watch?v=7yJ_MjP850g	Student PPT
55	L55	4	System Failure, Backup & Recovery Techniques	System Failure, Backup & Recovery Techniques	Flipped Classroom	Lecture through PPT		CO4	PPT		
56	L56	4	Defn. Acid Properties, System Failure, Recovery Techniques(Tutorials Of L40,L41,L42)	Defn. Acid Properties, System Failure, Recovery Techniques(Tutorials Of L40,L41,L42)	Discussion/ Doubt Clearing session						
57	L57	4	Authentication, Authorization	Authentication, Authorization		Lecture through PPT		CO4	PPT		Group Discussion
58	L58	4	Overview Of Query By Language	Overview Of Query By Language		Lecture through PPT		CO4	PPT	https://www.youtube.com/watch?v=6dM2g05emI	
59	L59	4	NoSQL Databases	NoSQL Databases		Lecture through PPT		CO4	PPT		
60	L60	4	Authentication, Authorization, Query, NoSQL Databases(Tutorials Of L43,L44,L45)	Authentication, Authorization, Query, NoSQL Databases(Tutorials Of L43,L44,L45)	Discussion/ Doubt Clearing session						

Note : 1 Credit (Theory) =15 Hrs. in a Semester; 1 Credit (Practical) =30 Hrs. in a Semester.

Suggested Readings (Latest Edition)

TEXTBOOKS

- TB1. El. Elmasri and SB Navroze. "Fundamentals of Database Systems", Pearson, 5th ed
- TB2. Singh S.K. "Database System Concepts: design and applications", Pearson Education (TB3) TB1.
- TB3. Ramakrishnan and Gherke. "Database Management Systems", TMH.
- TB4. Bipin Desai, "An introduction to Database Systems", Galgotia Publications, 1993.

REFERENCE BOOKS:

- RB1. Abraham Silberschatz, Henry Korth & Sudarshan, "Database Systems Concepts", 6th Edition, McGraw Hill, 2010
- RB2. Jim Melton. Alan Samson. "Understanding the new SQL: A complete Guide", Morgan Kaufmann Publishers, 1993.
- RB3. A. K. Mukherjee, P. Bhattacharya. "Database Management Systems", TMH, 2017.

JOURNALS

1. Journal of Computer Science and Technology
2. International Journal of Computer Applications
3. Journal of Educational Computing Research
4. ACM Transactions on Programming Languages and Systems (TOPLAS)
5. International Journal of Programming Languages and Computers
6. Computer Applications in Engineering Education
7. Journal of Computer Science Education
8. The Computer Journal
9. Software: Practice and Experience
10. Journal of Software Engineering and Applications

Name of Faculty : Mr. Gurpreet Singh Rawat

Head of Department : HOD Kumar

Date :

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