K L Deemed to be University
Department of CSE -- KLVZA
Course Handout
2020-2021, Odd Sem

Course Title	:DBMS-A
Course Code	:19CS2108A
L-T-P-S Structure	: 3-1-4-2
Pre-requisite	:
Credits	: 6.5
Course Coordinator	:RUTH RAMYA KALANGI
Team of Instructors	:
Teaching Associates	:

Syllabus : Database Fundamentals: DBMS Characteristics & Advantages, Database Environment, Database Users, Database Architecture, Data Independence, Languages, Tools and Interface in DBMS, DBMS types. Data Modelling: ER Model, Notation used in ER Diagram, Constraint, Types, Relationships in ER Model and other considerations in designing ER diagram. Enhanced, ER data Model, EER Diagram, Relational Model: concepts, constraints, schemas, ER to Relational Model. SQL & Relational Algebra: Data Definition and other languages in SQL, Creating tables and Data types, Constraints, DML statements, Functions and writing SQL statements using nested sub queries, complex queries, joining relations, views, compound statements, user defined functions, user defined procedures, cursors, Triggers, Relational Algebra :Operators in relational algebra, Database Design: Guidelines for good database design, Normalization- Normal Forms, First, Second, Third Normal Forms, BCNF, Multi value and join dependencies, 4th and 5th normal forms. Decomposition algorithms for normalization. File and storage structures: File storage, Index structures, Indexing and hashing, Query processing and optimization. Transaction Management: Transaction processing issues, Transaction states, problems during multiple transactions processing, ACID properties, system log and concurrency control techniques: Lock based techniques, and Timestamp based techniques, Multiversion based Techniques. Recovery Techniques: Recovery concepts, shadow paging, ARIES. Distributed Databases and NOSQL Systems : Distributed Database Concepts, NOSQL Databases and Big Data Storage Systems.

Text Books :1. Database System Concepts, Sixth Edition, Abraham Silberschatz, Yale University Henry, F. Korth Lehigh University, S. Sudarshan Indian Institute of Technology, Bombay. 2. Fundamentals of Database Systems, 7th Edition, Ramez Elmasri, University of Texas at Arlington, Shamkant B. Navathe, University of Texas at Arlington.

Reference Books :1. An Introduction to Database Systems by Bipin C. Desai 2. Pr1nc1ples of database and knowledge -base systems volume jeffrey d. 11 man. 3. Raghu RamaKrishnan , Johannes Gehrke, “Database Management Systems”, 3rd edition, Tata McGraw Hill, 2014.

MOOCS :1. https://www.coursera.org/learn/intro-sql 2. http://ilearning.oracle.com/ilearn/en/learner/jsp/user_home.jsp 3. http://www.ict.griffith.edu.au/~jw/normalization/ind.php#findCandidateKeys 4. https://www.tutorialspoint.com/mongodb/ 5. https://www.geeksforgeeks.org/distributed-database-system/

COURSE OUTCOMES (COs):

CO NO	Course Outcome (CO)	PO/PSO	Blooms Taxonomy

			Level (BTL)
CO1	Illustrate the functional components of DBMS and Design an ER Model for a database.	PO4,PSO1,PSO2,PO3	3
CO2	Design a relational model for a database & Implement SQL concepts and relational algebra.	PSO1,PO3,PO5	3
CO3	Implement PL/SQL programs, normalization techniques, indexing to construct and access database	PSO1,PO3,PO4	4
CO4	Analyze the importance of transaction Processing, concurrency control and recovery techniques nd also Distributed Databases and NOSQL Systems	PO5,PSO1	4
CO5	Design a database and implement SQL queries and PL/SQL programs to do various operations on data.	PSO1,PO3,PO5	6

COURSE OUTCOME INDICATORS (COIs)::

Outcome No.	Highest BTL	COI-1	COI-2	COI-3	COI-4	COI-5
CO1	3	**Btl-1** Recognize the disadvantages of Conventional File Systems	**Btl-2** Understand the tools and interfaces used in data base	**Btl-3** Design an ER model		
CO2	3	**Btl-1** List DDL, DML, TCL commands	**Btl-2** Interpret various symbols used in Relation Algebra	**Btl-3** Design Relational model for a given application		
CO3	4	**Btl-1** Examine the concepts of query processing	**Btl-2** Interpret the concepts of indexing	**Btl-3** Apply PL/SQL programs on a given database e	**Btl-4** Analyze given database and normalize it to eliminate redundancy	
CO4	4	**Btl-1** Enumerate the importance of Transaction Processing Issues	**Btl-2** Summarize properties of transactions	**Btl-3** Illustrate Crash causes and Recovery Mechanisms	**Btl-4** Analyze various concurrency control techniques and Distributed Databases, NOSQL & Big Data	
CO5	6	**Btl-1** Recall DDL, DML, TCL commands	**Btl-2** Draw an ER diagram for a given case study	**Btl-3** Apply SQL & PL/SQL programs on a given case study	**Btl-4** Analyze the concepts of normalization	**Btl-5** Design a database using MangoDB

PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES (POs/PSOs)

Po No.	Program Outcome
PO1	Engineering Knowledge :An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems in engineering
PO2	Problem Analysis :An ability to identify, formulate, research literature, analyze complex engineering problems in mechanical engineering using first principles of mathematics, natural sciences and engineering sciences
PO3	Design/ development of solutions :An ability to design solutions for complex engineering problems and system component or processes that meet the specified needs considering public health & safety and cultural, societal & environment
PO4	Conduct investigations of complex problems :An ability to use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to obtain solutions to engineering problems
PO5	Modern tool usage :Ability to create, select and apply appropriate techniques, resources and modern engineering activities, with an understanding of the limitations
PO6	The engineer and society :Ability to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO7	Environment and sustainability Ability to demonstrate the knowledge of engineering solutions, contemporary issues understanding their impacts on societal and environmental contexts, leading towards sustainable development
PO8	Ethics : An ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice
PO9	Individual and team work :An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
PO10	Communication :Ability to communicate effectively oral, written reports and graphical forms on complex engineering activities
PO11	Project management and finance :Ability to demonstrate knowledge and understanding of the engineering and management principles and apply those one’s own work, as a member and leader in team, to manage projects and in multi-disciplinary environments
PO12	Lifelong learning An ability to recognize the need for and having the preparation and ability to engage independent and life-long learning in broadest context of technological change
PSO1	An ability to design and develop software projects as well as Analyze and test user requirements.
PSO2	An Ability to gain working Knowledge on emerging software tools and technologies.

Lecture Course DELIVERY Plan:

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
1	CO1	COI-1	Course Handout File System Vs DBMS, DBMS Advantages, DBMS characteristics	R3 T1]8-9],T2[1][10-14,17],T[2][38-42]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
2	CO1	COI-1	Database Environment, Database Users, Database Architecture, Data Independence, Languages	T2[1][15-17, 32-36 & 52-53]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
3	CO1	COI-3	Using High-Level Conceptual Data Models for Database Design, A Sample Database Application, Entity Types, Entity Sets, Attributes, and Keys	T2[3][60-71]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
4	CO1	COI-3	Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types, Refining the ER Design for given Database, ER Diagrams, Naming Conventions, and Design Issues, Relationship Types of Degree Higher than Two	T2[3][72-81 & 88-92]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
5	CO1	COI-3	Subclasses, Super classes, and Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization Hierarchies, Modeling of UNION Types Using Categories,	T2[4][108-122]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
6	CO1	COI-1	Relational Model Concepts, Relational Model Constraints	T2[5][150-157],R3[74-85]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
7	CO1	COI-2	Relational Database Schemas, Logical Database Design: ER to Relational	T2[5][150-157], R3[74-85]	Chalk,PPT,Talk	ALM,End Semester Exam,Home Assignment,SEM-EXAM1
8	CO2	COI-1	Creating Tables, Data Types, Authorization	T2[6][179-183], T1[3] [57-59], T1[4] [136-140]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
9	CO2	COI-1	SQL Data Definition and Data Types, Specifying Constraints in SQL Basic Retrieval Queries in SQL, INSERT, DELETE, and UPDATE Statements in SQL, Additional Features of SQL, Joining Relations, views	T2[6][179-183], T1[3] [60-63]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
10	CO2	COI-3	More Complex SQL Retrieval Queries, Specifying Constraints as Assertions Actions as design a Relational model for a given application	T2[7][207-224], R3[5] [144-158], T1[3][74-80]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1
11	CO2	COI-2	Binary Relational Operations: JOIN and DIVISION, Unary Relational Operations: SELECT and PROJECT, Relational Algebra Operations from Set Theory, Binary Relational Operations: JOIN and DIVISION, Additional Relational Operations, Examples of Queries in Relational Algebra	T2[8][241-251],R3[4] [101-105]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,Home Assignment,SEM-EXAM1
12	CO3	COI-3	Syntax for PL/SQL block, Functions, Procedures	T2[7][226-227], T1[5][173-178]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,Home Assignment,SEM-EXAM2
13	CO3	COI-3	Cursors, Triggers	T1[5][180-186]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
14	CO3	COI-4	Guidelines for good database design, Normal Forms, First Normal Form, Second Normal Form, Third Normal Forms, BCNF, Multi value and join dependencies, 4th and 5th normal forms.	T1[14][461-482]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
15	CO3	COI-2	Secondary Storage Devices, Buffering of Blocks, Placing File Records on Disk, Operations on Files, Files of Unordered Records (Heap Files), Files of Ordered Records (Sorted Files)	T2[541-568] R3[10][339-366]540-568]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
16	CO3	COI-2	Types of Single-Level Ordered Indexes, Multilevel Indexes, Dynamic Multilevel Indexes Using B-Trees and B+-Trees	T2[541-568] R3[10][339-366]540-568]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
17	CO3	COI-2	Indexes on Multiple Keys, Other Types of Indexes, Some General Issues Concerning Indexing, Static Hashing, Extendible Hashing, Linear Hashing	T1[17][602-633], R3[11] [371-379]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
18	CO3	COI-1	Translating SQL Queries into Relational Algebra and Other Operators, Algorithms for External Sorting, Translating SQL Queries into Relational Algebra and Other Operators, Algorithms for External Sorting	T1[18][657-683]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
19	CO3	COI-1	Algorithms for PROJECT and Set Operations, Implementing Aggregate Operations, Different Types of JOINs	T1[18][657-683]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
20	CO4	COI-2	Introduction to Transaction Processing, Transaction and System Concepts	T1[7][121-127], R3[16] [520-523]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
21	CO4	COI-2	Problems during multiple transactions processing, Desirable Properties of Transactions, Characterizing Schedules Based on Recoverability. Characterizing Schedules Based on Serializability	T1[7][127-130],R3[16] [520-523]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
22	CO4	COI-4	Concurrent Execution of Transactions, Strict Two-Phase Locking (Strict 2PL), Deadlocks, 2PL, Serializability, and Recoverability, Introduction to Lock Management. Lock Conversions, Dealing With Deadlocks, Timestamp-Based Concurrency Control, The Thomas Write Rule, Recoverability	T1[7][130-131], R3[16][530-533],R3[17][550-558]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,Home Assignment,SEM-EXAM2
23	CO4	COI-4	Multiversion based Techniques , Recovery Outline and Categorization of Recovery Algorithms, Caching (Buffering) of Disk Blocks , Write-Ahead Logging, Steal/No-Steal, and Force/No-Force, Checkpoints in the System Log and Fuzzy Checkpointing	T1[7][140-141], R3[17][572]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
24	CO4	COI-4	Multiversion based Techniques , Recovery Outline and Categorization of Recovery Algorithms, Caching (Buffering) of Disk Blocks , Write-Ahead Logging, Steal/No-Steal, and Force/No-Force, Checkpoints in the System Log and Fuzzy Checkpointing	T1[7][140-141],R3[17][572]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
25	CO4	COI-3	Transaction Rollback and Cascading Rollback, Transaction Actions That Do Not Affect the Database, Shadow Paging, ARIES - Analysis Phase, ARIES – RedoPhase, Undo Phase	T1[7][141-145], R3[18][579-592]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
26	CO4	COI-3	Transaction Rollback and Cascading Rollback, Transaction Actions That Do Not Affect the Database, Shadow Paging, ARIES - Analysis Phase, ARIES – RedoPhase, Undo Phase	T1[7][141-145], R3[18][579-592]	Chalk,PPT,Talk	ALM,ATTN,End Semester Exam,SEM-EXAM2
27	CO4	COI-4	Distributed Database Concepts, Advantages of Distributed Databases, Data Fragmentation, Data Replication and Allocation, Example of Fragmentation, Allocation, and Replication	T1[23][842-853]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
28	CO4	COI-4	Overview of Concurrency Control and Recovery in Distributed Databases, Distributed Concurrency Control Based on a Distinguished Copy of a Data Item, Distributed Concurrency Control Based on Voting, Distributed Recovery	T1[23][865-868]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
29	CO4	COI-4	Two-Phase Commit Protocol, Three-Phase Commit Protocol, Operating System Support for Transaction Management	T1[23][842-853]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
30	CO4	COI-4	Distributed Query Processing, Data Transfer Costs of Distributed Query Processing, Distributed Query Processing Using Semijoin, Query and Update Decomposition	T1[23][868-868]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
31	CO4	COI-4	Types of Distributed Database Systems, Federated Database Management Systems Issues, Parallel versus Distributed Architectures, General Architecture of Pure Distributed Databases	T1[24][884-893]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
32	CO4	COI-4	Federated Database Schema Architecture, An Overview of Three-Tier Client/Server Architecture, Distributed Catalog Management	T1[24][890-895]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
33	CO4	COI-4	Emergence of NOSQL Systems, Characteristics of NOSQL Systems,, Categories of NOSQL Systems, The CAP Theorem	T1[24][895-903]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
34	CO4	COI-4	MongoDB Data Model, MongoDB CRUD Operations, MongoDB Distributed Systems Characteristics	T1[24][903-909]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
35	CO4	COI-4	DynamoDB Overview, Voldemort Key-Value Distributed Data Store, Examples of Other Key-Value Stores,, Hbase Data Model and Versioning, Hbase CRUD Operations, Hbase Storage and Distributed System Concepts	T1[25][914-919]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
36	CO4	COI-4	Neo4j Data Model, The Cypher Query Language of Neo4j,, Neo4j Interfaces and Distributed System Characteristics	T1[25][914-919]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
37	CO4	COI-4	What Is Big Data?, MapReduce, Hadoop Releases	T1[25][920-936]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
38	CO4	COI-4	Hadoop Distributed File Systems (HDFS)	T1[25][920-936]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2
39	CO4	COI-4	Map Reduce Additional Details ,Hadoop V2 alias YARN	T1[25][936-944]	Chalk,PPT,Talk	ATTN,Continuous Weekly,End Semester Exam,SEM-EXAM2

Lecture Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Recall the disadvantages of File System

Session Outcome: 2 List Advantages & characteristics of DBMS

Session Outcome: 3 Illustrate Database Environment

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Course Handout	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	File System Vs DBMS, DBMS Advantages, DBMS characteristics	2	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	3	Talk	Quiz/Test Questions

SESSION NUMBER : 2

Session Outcome: 1 Illustrate Database Environment

Session Outcome: 2 List various types of database users

Session Outcome: 3 Describe Database Architecture & Independence

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods

5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Database Environment, Database Users.	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	Database Architecture, Data Independence, Languages	2	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	3	Talk	Quiz/Test Questions

SESSION NUMBER : 3

Session Outcome: 1 Understand symbols used in ER Modelling

Session Outcome: 2 Draw an ER Diagram

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Using High-Level Conceptual Data Models for Database Design, A Sample Database Application, Entity Types, Entity Sets, Attributes, and Keys	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study	3	PPT	Case Study
20	Solving Case Study using tool TerraER	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Understand symbols used in ER Modelling

Session Outcome: 2 Draw an ER Diagram

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---

10	Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types, Refining the ER Design for the a Database, ER Diagrams, Naming Conventions, and Design Issues, Relationship Types of Degree Higher than Two	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving Case Study using tool TerraER	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Understand symbols used in EER Modelling

Session Outcome: 2 Draw an EER Diagram

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Subclasses, Super classes, and Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization Hierarchies, Modeling of UNION Types Using Categories	3	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving Case Study using tool Terra ER	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Understand Relational Model Concepts

Session Outcome: 2 Convert ER Model to Relational Model

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT

				APPLICABLE ---
10	Relational Model Concepts	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	Relational Model Constraints	2	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	1	Talk	Quiz/Test Questions

SESSION NUMBER : 7

Session Outcome: 1 Understand Relational Model Concepts

Session Outcome: 2 Convert ER Model to Relational Model

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Relational Database Schemas, Logical Database Design: ER to Relational	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving Case Study	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Interpret syntax of DDL Statements

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Creating Tables, Data Types, Authorization	2	PPT	--- NOT APPLICABLE ---

5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving Case Study using tool	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Summarize Data types used in SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	SQL Data Definition and Data Types, Specifying Constraints in SQL, Basic Retrieval Queries in SQL, INSERT, DELETE, and UPDATE Statements in SQL, Additional Features of SQL, Joining Relations, views	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving Case Study using tool TerraER	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Construct Complex SQL Queries & Assertions on a given database

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	More Complex SQL Retrieval Queries, Specifying Constraints as Assertions, Actions as design a Relational model for a given application	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving Case Study using tool	3	Talk	Case Study

5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Interpret notations used to denote Unary & Binary Relational Operations in Relational Algebra

Session Outcome: 2 Interpret notations used to denote Binary Relational Operations in Relational Algebra

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Binary Relational Operations: JOIN and DIVISION, Unary Relational Operations: SELECT and PROJECT, Relational Algebra Operations from Set Theory, Binary Relational Operations: JOIN and DIVISION, Additional Relational Operations, Examples of Queries in Relational Algebra	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment (ALM) Doubts can be asked in Public Chat	3	Talk	Quiz/Test Questions
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 Implement Functions in PL/SQL

Session Outcome: 2 Implement Procedures in PL/SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Syntax for PL/SQL block, Functions, Procedures	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	PPT	Case Study
20	Solving Case Study	1	Talk	Case Study

5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 1 Implement Cursors in PL/SQL

Session Outcome: 2 Implement Triggers in PL/SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Cursors, Triggers	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : Doubts can be asked in Public Chat	3	PPT	Case Study
20	Solving Case Study using tool	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 14

Session Outcome: 1 Illustrate Guidelines for good database design

Session Outcome: 2 Analyze First, Second Normal Form,Third Normal Forms, BCNF, Multi value and join dependencies, 4th and 5th normal forms

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Guidelines for good database design, Normal Forms, First Normal Form, Second Normal Form, Third Normal Forms, BCNF, Multi value and join dependencies, 4th and 5th normal forms	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	3	Talk	Quiz/Test Questions
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT

				APPLICABLE ---

SESSION NUMBER : 15

Session Outcome: 1 Summarize Placing File Records on Disk

Session Outcome: 2 Illustrate Operations on Files

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Secondary Storage Devices, Buffering of Blocks, Placing File Records on Disk	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	Operations on Files, Files of Unordered Records (Heap Files), Files of Ordered Records (Sorted Files)	2	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	3	Talk	Quiz/Test Questions

SESSION NUMBER : 16

Session Outcome: 1 Demonstrate B Trees & B+ Trees

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Types of Single-Level Ordered Indexes, Multilevel Indexes, Dynamic Multilevel Indexes Using B-Trees and B+-Trees	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	3	Talk	Quiz/Test Questions
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 17

Session Outcome: 1 Differentiate Extendible Hashing & Linear Hashing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Indexes on Multiple Keys, Other Types of Indexes, Some General Issues Concerning Indexing, Static Hashing, Extendible Hashing, Linear Hashing	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 18

Session Outcome: 1 Demonstrate Algorithms for SELECT & PROJECT Operation

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Translating SQL Queries into Relational Algebra and Other Operators, Algorithms for External Sorting	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	Translating SQL Queries into Relational Algebra and Other Operators, Algorithms for External Sorting	3	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	3	Talk	Quiz/Test Questions

SESSION NUMBER : 19

Session Outcome: 1 Demonstrate Algorithms for SELECT & PROJECT Operation

Session Outcome: 2 Illustrate JOIN Operation & Set Operations

Time(min)	Topic	BTL	Teaching-Learning	Active Learning

			Methods	Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Algorithms for PROJECT and Set Operations, Implementing Aggregate Operations	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	Different Types of JOINs	2	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	3	Talk	Quiz/Test Questions

SESSION NUMBER : 20

Session Outcome: 1 Enumerate Transaction Processing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Introduction to Transaction Processing	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
20	Transaction and System Concepts	2	PPT	--- NOT APPLICABLE ---
10	Quiz though LMS Discussion and Additional Info	3	Talk	Quiz/Test Questions

SESSION NUMBER : 21

Session Outcome: 1 Understand Problems during multiple transactions processing

Session Outcome: 2 Describe Desirable Properties of Transactions

Session Outcome: 3 Illustrate Schedules Based on Recoverability & Serializability

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE

10	Problems during multiple transactions processing, Desirable Properties of Transactions, Characterizing Schedules Based on Recoverability. Characterizing Schedules Based on Serializability	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 22

Session Outcome: 1 Analyze Concurrent Execution of Transactions, Strict Two-Phase Locking

Session Outcome: 2 Infer Dealing With Deadlocks

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Concurrent Execution of Transactions, Strict Two-Phase Locking (Strict 2PL), Deadlocks, 2PL, Serializability, and Recoverability, Introduction to Lock Management. Lock Conversions, Dealing With Deadlocks, Timestamp-Based Concurrency Control, The Thomas Write Rule, Recoverability	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 23

Session Outcome: 1 Analyze Timestamp-Based Concurrency Control

Session Outcome: 2 Analyze Multiversion based Techniques

Session Outcome: 3 Infer Write-Ahead Logging, Steal/No-Steal, and Force/No-Force

Session Outcome: 4 Discriminate Checkpoints in the System Log with Fuzzy Checkpointing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Multiversion based Techniques , Recovery Outline and Categorization of Recovery Algorithms, Caching (Buffering) of Disk Blocks , Write-Ahead Logging, Steal/No-Steal, and Force/No-Force, Checkpoints in the System Log and Fuzzy Checkpointing	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	1	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 24

Session Outcome: 1 Analyze Timestamp-Based Concurrency Control

Session Outcome: 2 Analyze Multiversion based Techniques

Session Outcome: 3 Infer Write-Ahead Logging, Steal/No-Steal, and Force/No-Force

Session Outcome: 4 Discriminate Checkpoints in the System Log with Fuzzy Checkpointing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Multiversion based Techniques , Recovery Outline and Categorization of Recovery Algorithms, Caching (Buffering) of Disk Blocks , Write-Ahead Logging, Steal/No-Steal, and Force/No-Force, Checkpoints in the System Log and Fuzzy Checkpointing	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 25

Session Outcome: 1 Illustrate Transaction Rollback & Cascading Rollback

Session Outcome: 2 Interpret Transaction Actions That Do Not Affect the Database

Session Outcome: 3 Demonstrate Shadow Paging

Session Outcome: 4 Demonstrate Phases of ARIES Algorithm

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Transaction Rollback and Cascading Rollback, Transaction Actions That Do Not Affect the Database, Shadow Paging, ARIES -Analysis Phase, ARIES –Redo Phase, Undo Phase	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public Chat	1	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	3	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 26

Session Outcome: 1 Illustrate Transaction Rollback & Cascading Rollback

Session Outcome: 2 Interpret Transaction Actions That Do Not Affect the Database

Session Outcome: 3 Demonstrate Shadow Paging

Session Outcome: 4 Demonstrate Phases of ARIES Algorithm

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Transaction Rollback and Cascading Rollback, Transaction Actions That Do Not Affect the Database, Shadow Paging, ARIES -Analysis Phase, ARIES –Redo Phase, Undo Phase	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment Doubts can be asked in Public	3	Talk	Quiz/Test

	Chat			Questions
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 27

Session Outcome: 1 Understand Distributed Database Concepts

Session Outcome: 2 Analyze Data Fragmentation, Replication and Allocation

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Distributed Database Concepts, Advantages of Distributed Databases	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Data Fragmentation, Data Replication and Allocation, Example of Fragmentation, Allocation, and Replication	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 28

Session Outcome: 1 Analyze Concurrency Control and Recovery in Distributed Databases

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Overview of Concurrency Control and Recovery in Distributed Databases, Distributed Concurrency Control Based on a Distinguished Copy of a Data Item	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Distributed Concurrency Control Based on Voting, Distributed Recovery	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE

SESSION NUMBER : 29

Session Outcome: 1 Analyze Transaction Management in Distributed Databases

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Two-Phase Commit Protocol, Three-Phase Commit Protocol	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Operating System Support for Transaction Management	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 30

Session Outcome: 1 Analyze Query Processing & Optimization in Distributed Databases

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Distributed Query Processing, Data Transfer Costs of Distributed Query Processing	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Distributed Query Processing Using Semijoin, Query and Update Decomposition	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 31

Session Outcome: 1 Understand Types of Distributed Database Systems

Session Outcome: 2 Demonstrate Distributed Database Architecture

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Types of Distributed Database Systems, Federated Database Management Systems Issues	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Parallel versus Distributed Architectures, General Architecture of Pure Distributed Databases	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 32

Session Outcome: 1 Analyze Distributed Catalog Management

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Federated Database Schema Architecture, An Overview of Three-Tier Client/Server Architecture	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Distributed Catalog Management	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 33

Session Outcome: 1 Understand Characteristics & Categories of NOSQL Systems

Session Outcome: 2 Analyze CAP Theorem

Time(min)	Topic	BTL	Teaching-	Active

			Learning Methods	Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Emergence of NOSQL Systems, Characteristics of NOSQL Systems,	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Categories of NOSQL Systems, The CAP Theorem	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 34

Session Outcome: 1 Analyze Document based NOSQL Systems & MongoDB

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	MongoDB Data Model, MongoDB CRUD Operations, MongoDB Distributed Systems Characteristics	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
5	Case Study : UNIVERSITY Database Doubts can be asked in Public Chat	3	Talk	Case Study
20	Solving UNIVERSITY Database Case Study	3	PPT	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 35

Session Outcome: 1 Analyze NOSQL Key Value Stores

Session Outcome: 2 Column Based or Wide Column NOSQL Systems

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT

				APPLICABLE ---
10	DynamoDB Overview, Voldemort Key-Value Distributed Data Store, Examples of Other Key-Value Stores,	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Hbase Data Model and Versioning, Hbase CRUD Operations, Hbase Storage and Distributed System Concepts	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 36

Session Outcome: 1 Analyze NOSQL Graph Databases

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Neo4j Data Model, The Cypher Query Language of Neo4j,	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Neo4j Interfaces and Distributed System Characteristics	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 37

Session Outcome: 1 Understand meaning of Big Data

Session Outcome: 2 Demonstrate MapReduce & Hadoop Releases

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	What Is Big Data?, MapReduce	2	PPT	--- NOT

				APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	Hadoop Releases	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 38

Session Outcome: 1 Demonstrate Hadoop Distributed File System (HDFS)

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	HDFS Preliminaries, Architecture of HDFS	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---
10	File I/O Operations and Replica Management in HDFS, HDFS Scalability, The Hadoop Ecosystem	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 39

Session Outcome: 1 Demonstrate Hadoop v2 alias YARN

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	MapReduce Runtime, Example: Achieving Joins in MapReduce	2	PPT	--- NOT APPLICABLE ---
5	Ask for any doubts through Public chat/ Break	1	Talk	--- NOT APPLICABLE ---

10	Apache Hive, Advantages of the Hadoop/MapReduce Technology, Hadoop v2 alias YARN	2	PPT	--- NOT APPLICABLE ---
20	MOOCS Discussion and Additional Info	1	Talk	--- NOT APPLICABLE ---

Tutorial Course DELIVERY Plan:

List of Experiments supposed to finish in Open Lab Sessions:

Lab session no	List of Experiments	CO-Mapping
1	Draw an ER Diagram for a given Case Study 1	CO1
2	Draw an ER Diagram for a given Case Study 2	CO5
3	Convert Case study 1 ER Diagram to Relational Model	CO1
4	Convert Case study 2 ER Diagram to Relational Model	CO1
5	Implement SQL Queries on Case Study 1	CO2
6	Implement SQL Queries on Case Study 2	CO2
7	Implement Relational Algebra Expressions on Case Study 1	CO2
8	Implement Relational Algebra Expressions on Case Study 2	CO2
9	Implement PL/SQL programs on Case Study 1	CO2
10	Implement PL/SQL programs on Case Study 2	CO3
11	Indexing & Hashing	CO3
12	Normalization	CO3
13	Transaction Processing & Concurrency Control	CO4

Tutorial Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-	Active

			Learning Methods	Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study 1	3	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Draw an ER Diagram for a given Case Study 1	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Case study 2 explanation	2	Talk	Case Study
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Convert Case study 1 ER Diagram to Relational Model

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Convert Case study 1 ER Diagram to Relational Model	3	Talk	Case Study
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE

20	Case Study : Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Convert Case study 2 ER Diagram to Relational Model

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Convert Case study 2 ER Diagram to Relational Model	3	Talk	Case Study
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Implement SQL Queries on Case Study 1

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study 1	3	Talk	Case Study
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Implement SQL Queries on Case Study 2

Time(min)	Topic	BTL	Teaching-	Active

			Learning Methods	Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study 2	3	Talk	Case Study
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	1	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Implement Relational Algebra Expressions on Case Study 1

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement Relational Algebra Expressions on Case Study 1	3	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Implement Relational Algebra Expressions on Case Study 2

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement Relational Algebra Expressions on Case Study 2	3	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE

20	Case Study : Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Implement PL/SQL programs on Case Study 1

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL programs on Case Study 1	3	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Implement PL/SQL programs on Case Study 2

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL programs on Case Study 2	3	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Indexing & Hashing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Indexing & Hashing	3	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	Case Study
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 Normalization

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Normalization Explanation	2	PPT	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 1 Transaction Processing & Concurrency Control

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE

10	Transaction Processing & Concurrency Control	2	Talk	--- NOT APPLICABLE ---
10	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Case Study : Doubts can be asked in Public Chat	3	Talk	--- NOT APPLICABLE ---
5	Problems Discussion Peer evaluation after the classroom	1	Talk	--- NOT APPLICABLE ---

Practical Course DELIVERY Plan:

Tutorial Session no	Topics	CO-Mapping
1	Introduction to DBMS Lab	CO5
2	Draw an ER Diagram for a given Case Study 1 & 4 (TRANSPORT DEPARTMENT) (KL University ERP)	CO5
3	Draw an ER Diagram for a given Case Study 2& 5 (EMERGENCY ROOM INFORMATION SYSTEM) & (TOUR OPERATING SYSTEM)	CO5
4	Draw an ER Diagram for a given Case Study 3& 6 (WAREHOUSE SYSTEM) (PAINITING HIRE BUSINESS)	CO5
5	Implement basic SQL Queries DDL commands, DML commands, Integrity Constraints & Joins on Case Stud 1 & 4 (TRANSPORT DEPARTMENT) (KL University ERP)	CO5
6	Implement Aggregate Functions, Group by & Having Clauses, Nested, Correlated Nested, Views, Indices and DCL Commands on Case Study 1 & 4 (TRANSPORT DEPARTMENT) (KL University ERP)	CO5
7	Implement SQL Queries on Case Study 2 & 5 (EMERGENCY ROOM INFORMATION SYSTEM) & (TOUR OPERATING SYSTEM)	CO5
8	Implement SQL Queries on Case Study 3& 6 (WAREHOUSE SYSTEM) (PAINITING HIRE BUSINESS)	CO5
9	Implement PL/SQL(basic, Cursors, Procedure) Programs on Case Study 1& 4 (TRANSPORT DEPARTMENT) (KL University ERP)	CO5
10	Implement PL/SQL(Functions, Triggers, Packages, JDBC & ODBC Connection) Programs on Case Study 1& 4 (TRANSPORT DEPARTMENT)	CO5

Tutorial Session no	Topics	CO-Mapping
11	Implement PL/SQL Programs on Case Study 2 & 5 (EMERGENCY ROOM INFORMATION SYSTEM) & (TOUR OPERATING SYSTEM)	CO5
12	Implement PL/SQL Programs on Case Study 3& 6 (WAREHOUSE SYSTEM) (PAINITING HIRE BUSINESS)	CO5
13	Construct Queries using MongoDB on Case Study 1 & 4 (TRANSPORT DEPARTMENT)	CO5
14	Construct Queries using MongoDB on Case Study 2 & 5 (EMERGENCY ROOM INFORMATION SYSTEM) & (TOUR OPERATING SYSTEM)	CO5
15	Construct Queries using MongoDB on Case Study 3& 6 (WAREHOUSE SYSTEM) (PAINITING HIRE BUSINESS)	CO5

Practical Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Introduction to DBMS

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Introduction to DBMS	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Implement basic SQL Queries

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement basic SQL Queries	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Implement Aggregate Functions

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement Aggregate Functions	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Implement SQL Queries on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Implement SQL Queries on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Implement PL/SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Implement PL/SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Implement PL/SQL Programs on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL Programs on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 Implement PL/SQL Programs on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL Programs on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 1 Construct Queries using MongoDB on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Construct Queries using MongoDB on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 14

Session Outcome: 1 Construct Queries using MongoDB on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Construct Queries using MongoDB on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 15

Session Outcome: 1 Construct Queries using MongoDB on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Construct Queries using MongoDB on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

Skilling Course DELIVERY Plan:

Skilling session no	Topics/Experiments	CO-Mapping
1	Introduction to DBMS Skilling	CO5
2	Draw an ER Diagram for a given Case Study 7 (PROPERTY RENTAL INFORMATION SYSTEM)	CO5
3	Draw an ER Diagram for a given Case Study 8 (SAINT GOBAIN)	CO5
4	Draw an ER Diagram for a given Case Study 9 (MILITARY DATABASE)	CO5
5	Implement SQL Queries on Case Study 7 (PROPERTY RENTAL INFORMATION SYSTEM)	CO5
6	Implement SQL Queries on Case Study 8 (SAINT GOBAIN)	CO5
7	Implement SQL Queries on Case Study 9 (MILITARY DATABASE)	CO5
8	Implement PL/SQL Programs on Case Study 7 (PROPERTY RENTAL INFORMATION SYSTEM)	CO5
9	Implement PL/SQL Programs on Case Study 8 (SAINT GOBAIN)	CO5
10	Implement SQL Queries on Case Study 9 (MILITARY DATABASE)	CO5
11	Construct Queries using MongoDB on Case Study 9 (MILITARY DATABASE)	CO5
12	Construct Queries using MongoDB on Case Study 7 (PROPERTY RENTAL INFORMATION SYSTEM)	CO5

Skilling Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Introduction to DBMS Skilling

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Introduction to DBMS Skilling	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE

40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study	3	Talk	Case Study
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---

40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Draw an ER Diagram for a given Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Draw an ER Diagram for a given Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Implement SQL Queries on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE

40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Implement SQL Queries on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Implement SQL Queries on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT

				APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Implement PL/SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL Programs on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Implement PL/SQL

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement PL/SQL	5	Talk	--- NOT APPLICABLE ---

5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Implement SQL Queries on Case Study

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Implement SQL Queries on Case Study	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Construct Queries using MongoDB

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Construct Queries using MongoDB	5	Talk	--- NOT APPLICABLE

5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 Construct Queries using MongoDB

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/ Recap, Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
10	Construct Queries using MongoDB	5	Talk	--- NOT APPLICABLE ---
5	Split to sections	1	Talk	--- NOT APPLICABLE ---
40	Experimentation using tool/remote lab/hardware setup	5	Talk	--- NOT APPLICABLE ---
10	Assessment and Interaction	5	Talk	--- NOT APPLICABLE ---
20	Documenting Results Summary and result Explanation Submitting as Assignment in LMS	5	Talk	--- NOT APPLICABLE ---

WEEKLY HOMEWORK ASSIGNMENTS/ PROBLEM SETS/OPEN ENDEDED PROBLEM-SOLVING EXERCISES etc:

Week	Assignment Type	Assignment No	Topic	Details	co

COURSE TIME TABLE:

	Hour	1	2	3	4	5	6	7	8	9

Day	Component									
Mon	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Tue	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Wed	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Thu	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Fri	Theory	---	---	---	---	---	---	---	---	---
	Tutorial	---	---	---	---	---	---	---	---	---
	Lab	---	---	---	---	---	---	---	---	---
	Skilling	---	---	---	---	---	---	---	---	---
Sat	Theory	--	--	---	---	---	---	--	--	---
	Tutorial	--	--	---	---	---	---	--	--	---
	Lab	V-S1	V-S1	---	---	---	---	V-S1	V-S1	---
	Skilling	--	--	---	---	---	---	--	--	---
Sun	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--

REMEDIAL CLASSES:

Supplement course handout, which may perhaps include special lectures and discussions that would be planned, and schedule notified according

SELF-LEARNING:

Assignments to promote self-learning, survey of contents from multiple sources.

S.no	Topics	CO	ALM	References/MOOCS

DELIVERY DETAILS OF CONTENT BEYOND SYLLABUS:

Content beyond syllabus covered (if any) should be delivered to all students that would be planned, and schedule notified accordingly.

S.no	Advanced Topics, Additional Reading, Research papers and any	CO	ALM	References/MOOCS

EVALUATION PLAN:

Evaluation Type	Evaluation Component	Weightage/Marks		Assessment Dates	Duration (Hours)	CO1	CO2	CO3	CO4	CO5
End Semester Summative Evaluation Total= 40 %	End Semester Exam	Weightage	24		90	6	6	6	6	
		Max Marks	100			25	25	25	25	
	Lab End Semester Exam	Weightage	8		90					8
		Max Marks	50							50
	SEM End Project	Weightage	8		90					8
		Max Marks	50							50
In Semester Formative Evaluation Total= 30 %	Home Assignment and Textbook	Weightage	4		50	1	1	1	1	
		Max Marks	40			10	10	10	10	
	Continuous Evaluation - Lab Exercise	Weightage	5		90					5
		Max Marks	50							50
	Continuous Evaluation -Project	Weightage	5		90					5
		Max Marks	50							50
	Continuous(weekly) - Test (40 MCQ)	Weightage	3		90				3	
		Max Marks	40						40	
	ALM	Weightage	4		90	1	1	1	1	
		Max Marks	260			65	65	65	65	
	Attendance	Weightage	5		90	1	1	1	1	1
		Max Marks	5			1	1	1	1	1
	Tutorial	Weightage	4		90	1	1	1	1	
		Max Marks	130			32.5	32.5	32.5	32.5	
In Semester Summative Evaluation Total= 30 %	Semester in Exam-I	Weightage	10		90	5	5			
		Max Marks	50			25	25			
	Semester in Exam-II	Weightage	10		90			5	5	
		Max Marks	50					25	25	
	Lab In Semester Exam	Weightage	10		90					10
		Max Marks	60							60

ATTENDANCE POLICY:

Every student is expected to be responsible for regularity of his/her attendance in class rooms and laboratories, to appear in scheduled tests and examinations and fulfill all other tasks assigned to him/her in every course
In every course, student has to maintain a minimum of 85% attendance to be eligible for appearing in Semester end examination of the course, for cases of medical issues and other unavoidable circumstances the students will

be condoned if their attendance is between 75% to 85% in every course, subjected to submission of medical certificates, medical case file and other needful documental proof to the concerned departments

DETENTION POLICY :

In any course, a student has to maintain a minimum of 85% attendance and In-Semester Examinations to be eligible for appearing to the Semester End Examination, failing to fulfill these conditions will deem such student to have been detained in that course.

PLAGIARISM POLICY :

Supplement course handout, which may perhaps include special lectures and discussions

COURSE TEAM MEMBERS, CHAMBER CONSULTATION HOURS AND CHAMBER VENUE DETAILS:

Supplement course handout, which may perhaps include special lectures and discussions

Name of Faculty	Delivery Component of Faculty	Sections of Faculty	Chamber Consultation Day (s)	Chamber Consultation Timings for each day	Chamber Consultation Room No:	Signature of Course faculty:
RUTH RAMYA KALANGI	L	1-MA	-	-	-	-
RUTH RAMYA KALANGI	P	1-MA	-	-	-	-
RUTH RAMYA KALANGI	S	1-MA	-	-	-	-
RUTH RAMYA KALANGI	T	1-MA	-	-	-	-

GENERAL INSTRUCTIONS

Students should come prepared for classes and carry the text book(s) or material(s) as prescribed by the Course Faculty to the class.

NOTICES

Most of the notices are available on the LMS platform.

All notices will be communicated through the institution email.

All notices concerning the course will be displayed on the respective Notice Boards.

Signature of COURSE COORDINATOR

(RUTH RAMYA KALANGI)

Signature of Department Prof. Incharge Academics & Vetting Team Member

Department Of CSE

HEAD OF DEPARTMENT:

Approval from: DEAN-ACADEMICS
(Sign with Office Seal) [object HTMLDivElement]