COURSE PLAN

Department	:	Computer Applications
Course Name & code	:	Database Management System & MCA 4122
Semester & branch	:	I & M.C.A.
Name of the faculty	:	Vinayak Mantoor & Archana.H

No of contact hours/week:

L	T	P	C
3	1	0	4

Course Outcomes (COs)

	At the end of this course, the student should be able to:	No. of Contact Hours	Marks
CO1:	Understand database concepts,different data models and database languages	04	10
CO2:	Manipulate, retrieve the data from database using SQL and perform database operations by intergrating procedual language constructs	15	30
CO3:	Design ER-Model for a given scenario and apply database normalization techniques to design a good database	12	26
CO4:	Understand the issues of database system such as storage, query execution, Transaction management, Concurrency control and Recovery	16	32
CO5:	Understanding the unstructured database	2	2
	Total	49	100

Assessment Plan

Components	Assignments	Sessional Tests	End Semester/ Make-up Examination
Duration	20 to 30 minutes	60 minutes	180 minutes
Weightage	20 % (4 X 5 marks)	30 % (2 X 15 Marks)	50 % (1 X 50 Marks)
Typology of Questions	Understanding; Applying; Analyzing; Evaluating; Creating	Remembering; Understanding; Applying	Understanding; Applying; Analyzing; Evaluating; Creating
Pattern	Answer one randomly selected question from the problem sheet (Students can refer their class notes)	MCQ (10 marks): 10 questions of 0.5 marks each Short Answers (10 marks): questions of 2 or 3 marks	Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks
Schedule	As notified by Associate Director (Academics) at the start of each semester	Calendared activity	Calendared activity
Topics Covered	Assignment 1 (L 1-3 & T 0) **(CO1)**	Test 1 (L 1-18 & T 0) **(CO1&2)**	Comprehensive examination covering full syllabus. Students are expected to answer all questions **(CO1-5)**
	Assignment 2 (L **4-18** & T 0) **(CO2)**		
	Assignment 3 (L 19-30 & T 0) **(CO3)**	Test 2 (L 19-35 & T 0) **(CO3&4)**	
	Assignment 4 (L 31-46 & T 0) **(CO4)**		

Lesson Plan

L. No.	Topics	Course Outcome Addressed
L0	Introduction –Database System Applications	CO1
L1	Discussing advantages of Database System over File-oriented System ,View of data	CO1
L2	Data models and Database languages, Database Design, Database Architecture, Users and Administrator	CO1
L3	Relational Model Structure, Concept of keys	CO1
L4	Overview of the SQL Query Language-Data Definition, Data types, Schema	CO2
L5	Integrity Constraints-not null,unique,check,referential integrity	CO2
L6	Modification of database-Deletion, Insertion, Updates	CO2
L7	Basic structure of SQL queries-single, multiple relations,natural join,	CO2
L8	Additional Basic Operations-Rename, String, Ordering, Where clause predicates	CO2

L9	Set Operations – Union, Intersect, Except operation, Null Values,	CO2
L10	Additional functions-Character,Number,Date functions, Aggregate Functions	CO2
L11	Nested Subqueries	CO2
L12	Intermediate SQL,Views	CO2
L13	Transactions, Authorizations	CO2
L14	Advanced SQL - PL/SQL fundamentals, SQL in PL/SQL, Conditional, Iterative control,	CO2
L15	Error Handling and Exceptions	CO2
L16	Cursors – Manipulations, Using cursor For loops and Nested Cursors, Using parameters with cursor	CO2
L17	Triggers-Introduction, types of triggers, Mutable table issues	CO2
L18	Procedures, Functions, Packages	CO2
L19	Entity Relationship Model- ER Diagram Basic Concepts, Mapping Cardinalities	CO3
L20	Participation constraints and keys, Weak Entity Set	CO3
L21	Extended ER relations	CO3
L22	Design Issues of ER Diagram,Example	CO3
L23	Converting a complete ER diagram into schema, Schema Diagram	CO3
L24	Relational Database Design – Features of good database design, Functional Dependency, First Normal Form, Second normal Form.	CO3
L25	Decomposition using functional dependencies	CO3
L26	BCNF and 3NF	CO3
L27	Closure of a set of FD	CO3
L28	Closure of attribute sets	CO3
L29	Canonical Cover	CO3
L30	Lossless Decomposition, Dependency Preservation	CO3
L31	Storage and File structure, File organization	CO4
L32	Organization of records in files	CO4
L33	Indices - Ordered, Dense, Sparse index, Secondary index	CO4
L34	B+ trees File Organization	CO4
L35	Static Hashing	CO4
L36	Query Processing – Overview, Measure of Query Cost	CO4
L37	Join Algorithms	CO4

L38	Evaluation of Expressions	CO4
L39	Query Optimization, Join ordering	CO4
L40	Estimating statistics of expression results, Materialized Views	CO4
L41	Transactions, Concepts, Simple transaction model	CO4
L42	Transaction atomicity and durability, Schedules-serial, concurrent	CO4
L43	Serializability	CO4
L44	Deadlock Handling	CO4
L45	Concurrency Control, Lock based protocols	CO4
L46	Recovery System	CO4
L47	Unstructured database, Introduction to NoSQL	CO5
L48	DBMS vs NoSQL	CO5
L49	NoSQL databases	CO5

References:

1. Abraham Silberschatz, Henry Korth, S. Sudarshan "Database System Concepts ", 6th Edition, McGraw Hill, 2010.
2. Ramez Elmasri, Shamkant Navathe "Fundamentals of Database System", 6th Edition, Addison Wesley Publications Co., 2010
3. Raghu Ramakrishnan, Johannes Gehrke, "Database Management System", 3rd Edition, WCB/McGraw Hill Publisher, 2007
4. G.K.Gupta, "Database Mangement Systems", Tata McGraw-Hill,2011.
5. Shashank Tiwari," Professional NOSQL", Wiley, 2015.
6. Ivan Bayross, "SQL, PL/SQL-The Programming Language of ORACLE", 4th Edition, BPB Publications, 2009.
7. **BENJAMIN ROSENZWEIG, ELEN SILVESTROVA, "ORACLE PL/SQL BY EXAMPLE",4TH EDITION, ADDION-WESLEY,2009.**

Submitted by: Vinayak Mantoor & Archana.H

(Signature of the faculty)

Date: 08-08-2023

Approved by: DR.RADHIKA M PAI

(Signature of HOD)

Date: 08-08-2023

FACULTY MEMBERS TEACHING THE COURSE (IF MULTIPLE SECTIONS EXIST):

FACULTY	SECTION	FACULTY	SECTION
Vinayak Mantoor	A	Archana.H	B

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