

	<p style="text-align: center;">Bhartiya Vidya Bhavan's</p> <p style="text-align: center;"><b>Sardar Patel Institute of Technology</b></p> <p style="text-align: center;">(Autonomous Institute Affiliated to University of Mumbai)</p> <p style="text-align: center;">[Knowledge is Nectar]</p>
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**Computer Science and Engineering [AIML]**  
**Course Plan**

Class: SE(AIML)

Semester: III

Course Name: Database Management Systems

Course Code: CS204

Faculty Name: Prof. Renuka Pawar

Academic Year: 2023-24

Course (Category) Code	Course Name	Teaching Scheme (Hrs/week)					Credits Assigned			
		L	T	P	O	E	L	T	P	Total
(PC)	Database Management systems	3	0	2	5	10	3	0	1	4
		Examination Scheme								
		Component		ISE		MSE		ESE		Total
		Theory		75		75		150		300
CS204/IT204		Laboratory		50		--		50		100

<b>Course Objective:</b> To efficiently and effectively Design, develop, maintain, and retrieve the Information from DBMS.	
<b>Course Outcomes (CO):</b> <i>At the End of the course students will be able to</i>	
CO1	Demonstrate understanding of a given system to construct a database model.
CO2	Apply various Relational and SQL commands on the populated database
CO3	Examine the functional dependencies to make a normalized database system
CO4	Examine transaction processing techniques on a database
CO5	Illustrate query processing and optimization method on a database

Lect No	Topic/Subtopics	CO	Delivery Method	Planned Date	Actual Date
1	Overview of DBMS syllabus, co and po, introduction to basic concept of Database	CO1	WB/PPT	18/8	
2	Characteristics of databases, File system V/s Database system	CO1	WB/PPT	21/8	
3	Users of Database system, Database Administrator	CO2	WB/PPT	22/8	
4	Data Independence, Codd's Rule,	CO2	WB/PPT/Demo	25/8	

5	DBMS system architecture	CO1	WB/PPT/Demo	28/8	
6	Introduction to ER model, Benefits of Data Modeling,	CO2	WB/PPT/Demo	29/8	
7	Types of data Models, Phases of Database Modeling,	CO1	WB/PPT	1/9	
8	The Entity-Relationship (ER) Model	CO2	WB/PPT/Demo	4/9	
9	Extended Entity-Relationship (EER) Model	CO1	WB/PPT	5/9	
10	Introduction, Mapping the ER and EER Model to the Relational Model,	CO2	WB/PPT/Demo	6/9	
11	Introduction, Mapping the ER and EER Model to the Relational Model,	CO1	WB/PPT	11/9	
12	Introduction, Mapping the ER and EER Model to the Relational Model,	CO1	WB/PPT	12/9	
13	Introduction, Mapping the ER and EER Model to the Relational Model,	CO2	WB/PPT	13/9	
14	Relational Algebra: Overview,	CO1	WB/PPT	18/9	
15	Basic Operators, Extended Operators	CO1	WB/PPT	20/9	
16	Relational Algebra: Overview, Basic Operators	CO2	WB/PPT	25/9	
17	Extended Operators	CO4	WB/PPT	26/9	
18	Overview of SQL-Data Definition Commands	CO2	WB/PPT	27/9	
19	Data Manipulation commands	CO4	WB/PPT/Demo	9/10	
20	Data Control commands, Set operations	CO2	WB/PPT/Demo	10/10	
21	aggregate function, null values	CO4	WB/PPT/Demo	11/10	
22	Views in SQL, Subquery	CO2	WB/PPT/Demo	16/10	
23	Trigger, stored procedure	CO4	WB/PPT	17/10	
24	Design guidelines for relational schema	CO2	WB/PPT/Demo	18/10	
25	Functional dependencies	CO4	WB/PPT/Demo	23/10	
26	Normal Forms- 1NF, 2 NF	CO2	WB/PPT	25/10	
27	3NF, BCNF	CO4	WB/PPT	30/10	
28	4NF,5NF	CO2	WB/PPT	31/10	
29	Transaction concept	CO4	WB/PPT	1/11	
30	Transaction states, ACID properties	CO2	WB/PPT	6/11	
31	Implementation of atomicity and durability	CO5	WB/PPT	7/11	
32	Concurrent Executions	CO5	WB/PPT	8/11	
33	Serializability, Recoverability, Lock-based	CO5	WB/PPT	13/11	
34	Timestamp-based, Validation-based protocols	CO5	WB/PPT	15/11	
35	Shadow paging, Deadlock handling	CO5	WB/PPT	20/11	
36	Basics of Query Processing	CO3	WB/PPT	21/11	
37	Measures of Query Cost	CO5	WB/PPT	22/11	
38	Query Optimization: Equivalence Rules	CO3	WB/PPT	28/11	
39	Query Optimization: Pictorial representations	CO3	WB/PPT	29/11	
40	Guest lecture Online on advanced concepts of DBMS				
41					

42	Revision Lecture				
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**MSE- 3rd october to 6 october**

### **Textbooks**

<b>Sr. No.</b>	<b>Title</b>	<b>Edition</b>	<b>Authors</b>	<b>Publisher</b>	<b>Year</b>
1	Database System Concepts	Seventh	Korth, Silberchatz, Sudarshan	McGraw – Hill	2019
2	Fundamentals of Database Systems	Sixth	Elmasri and Navathe	PEARSON Education	2011

### **Reference Books**

<b>Sr. No.</b>	<b>Title</b>	<b>Edition</b>	<b>Authors</b>	<b>Publisher</b>	<b>Year</b>
1	Database Management Systems	Third	Raghu Ramkrishnan and Johannes Gehrke	TMH	2003
2	Database Management Systems	First	G. K. Gupta	McGraw – Hill.	2018
3	SQL, PL/SQL programming language of ORACLE	Forth	Ivan Bayross	BPB	2010

### **ISE Plan**

<b>ISE No</b>	<b>ISE DETAILS</b>	<b>Weightage</b>	<b>Proposed Time</b>
1	ER Model Designing (Module 1 and 2)	10 Marks	Before MSE
2	Quiz 1: (Module 3,4 and 5)	10 marks	After MSE

### **Lab Plan**

#### **Laboratory Component:**

Assign a case study for group of 2/3 students and each group will perform following experiments on the case study.

<b>Exp No.</b>	<b>No of hours</b>	<b>Title of the Experiment</b>
1	4	Formulate a case study and create an E-R Diagram. Mapping of E-R model to Relational Model.

2	2	To create a database and populate using SQL commands (With constraints) <ul style="list-style-type: none"> <li>• Data Definition Language- Create, Alter, Drop, Rename, Truncate</li> <li>• Data Manipulation Language- Insert, Update, Delete, Select</li> <li>• Constraints-Not Null, Unique Key, Primary Key, Foreign Key, Check, Dropping a Constraint.</li> </ul>
3	2	To perform DCL, TCL commands <ul style="list-style-type: none"> <li>• Data Control Language: Grant, Revoke, Roles</li> <li>• Transaction Control Language: Commit, Rollback, Save point</li> </ul>
4	2	To perform Date, Time, Arithmetic and Set operation on database.
5	2	To perform Aggregate function and Group by- Having clause on database
6	2	To perform Join operations on database. <ul style="list-style-type: none"> <li>• Equijoins, Non-Equijoins, Self Joins, Outer Join, cross Join</li> </ul>
7	2	To retrieve a data using Subquery.
8	2	To Create a different view of database.
9	2	To examine integrity of database using Triggers.
10	2	To improve performance of system using stored procedure.

Sr no	Lab no	Batch B Monday	Batch D Wednesday	Batch A Thursday	Batch C Tuesday
1.	1	21/8	23/8	17/8	18/8
2.	1	28/8	30/8	24/8	25/8
3.	2	4/9	6/9	31/8	1/9
4.	3	11/9	13/9	7/9	5/9
5.	4	18/9	20/9	14/9	12/9
6.	5	25/9	27/9	21/9	26/9
7.	6	9/10	11/10	12/10	3/10
8.	7	16/10	18/10	19/10	10/10
9.	8	23/10	25/10	26/10	17/10
10.	9	30/10	1/11	2/11	31/10
11.	10	6/11	8/11	9/11	7/11
12.	Practice lab	13/11	22/11	16/11	21/11
13.	Practice lab	20/11 Lab ESE	29/11 Lab ESE	23/11	28/11 Lab ESE
14.	-	-	-	30/11 Lab ESE	