

Maharashtra State Board of Technical Education, Mumbai

Laboratory Plan (LP-PR)/ Course Information Sheet (CIS)

K-2A

Academic Year: 2026-27

Date: 27/06/2026

Institute Name: K K Wagh Polytechnic, Nashik

MSBTE Code: 0078

Program and Code: Computer Technology (CM)

Course Code & Abbr.: 313302 (DMS)

Course Name: Database Management System (DMS)

Name of Faculty: Mr. A. D. Talole

Class: SYCM-Win **Semester:** 3rd **Scheme:** K

Course Index: CI304 **Learning Hrs:** 32

● Teaching-Learning & Assessment Scheme:

Title	Course Code / Abbr	Course Category	Learning Scheme						Credits	Duration (hrs)	Assessment Scheme									
			Actual Contact Hrs/Week			SLH	NLH	Theory				Based on LL & TSL Practical				Based on SL		Total Marks		
			CL	TL	LL			FA TH			SA TH	Total	FA-PR		SA-PR		SLA			
													Max	Max	Max	Min	Max		Min	Max
Database Management System	313302/DMS	DSC	3	1	4	2	10	5	3	30	70	100	40	50	20	25#	10	25	10	200

Abbreviations: CL- Class Room Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS – Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination, @\$ Internal Online Examination

● Course Outcomes (COs): Theory & Practical

By learning course Database Management System (DMS-313315) Second Year students will be able to:

CO No.	Course Outcomes (COs) / Unit Outcomes (UOs)
CO304.1(CO1)	Explain concept of database management system
CO304.2(CO2)	Design the database for given problem
CO304.3(CO3)	Manage database using SQL
CO304.4(CO4)	Implement PL/SQL codes for given application
CO304.5(CO5)	Apply security and backup methods on database

● COs, Practical Laboratory Learning Outcome (LLOs) and Mapping:

Pr. No	COs	LLO	Practical -Laboratory Learning Outcome (LLO)
PR 1	CO304.1 (CO1)	LLO 1.1	Install database software
PR 2	CO304.2 (CO2)	LLO 2.1	Create Database schema for given application
PR 3	CO304.3 (CO3)	LLO 3.1	Execute DDL Commands to manage database using SQL
PR 4	CO304.3 (CO3)	LLO 4.1	Execute DML Commands to manipulate data using SQL
PR 5	CO304.3 (CO3)	LLO 5.1	Execute DCL Commands to control the access to data using SQL
PR 6	CO304.3 (CO3)	LLO 6.1	Execute TCL Commands to control transactions on data using SQL
PR 7	CO304.3 (CO3)	LLO 7.1	Implement Queries using Arithmetic operators
PR 8	CO304.3 (CO3)	LLO 8.1	Implement Logical operators to apply various conditions in query
PR 9	CO304.3 (CO3)	LLO 9.1	Implement Relational operators to apply various conditions in query
PR 10	CO304.3 (CO3)	LLO 10.1	Write Queries to implement SET operations using SQL
PR 11	CO304.3 (CO3)	LLO 11.1	Execute queries using String functions
PR 12	CO304.3 (CO3)	LLO 12.1	Execute queries using Arithmetic functions
PR 13	CO304.3 (CO3)	LLO 13.1	Implement queries using Date and Time functions
PR 14	CO304.3 (CO3)	LLO 14.1	Implement queries using Aggregate functions
PR 15	CO304.3 (CO3)	LLO 15.1	Execute Queries for ordering and grouping data
PR 16	CO304.3 (CO3)	LLO 16.1	Execute the queries based on Inner & outer join
PR 17	CO304.3 (CO3)	LLO 17.1	Create and manage Views for faster access on relations
PR 18	CO304.4 (CO4)	LLO 18.1	Implement PL/SQL program using Conditional Statements
PR 19	CO304.4 (CO4)	LLO 19.1	Implement PL/SQL program using Iterative Statements
PR 20	CO304.4 (CO4)	LLO 20.1	Implement PL/SQL program using Sequential Control
PR 21	CO304.4 (CO4)	LLO 21.1	Create implicit & explicit cursors

PR 22	CO304.4 (CO4)	LLO 22.1	Implement PL/SQL program based on Exception Handling (Predefined exceptions)
PR 23	CO304.4 (CO4)	LLO 23.1	Implement PL/SQL program based on Exception Handling (user defined exceptions)
PR 24	CO304.4 (CO4)	LLO 24.1	Create Procedures and stored
PR 25	CO304.4 (CO4)	LLO 25.1	Create function for given database
PR 26	CO304.4 (CO4)	LLO 26.1	Implement triggers for given database
PR 27	CO304.5 (CO5)	LLO 27.1	Implement SQL queries for database administration

LLO-CO Mapping with PO, PSO

LLOs		COs	POs							PSOs	
			PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PSO1	PSO2
Install database software	LLO 1.1	CO304.1 (CO1)	3	--	--	--	1	--	1	1	--
Create Database schema for given application	LLO 2.1	CO304.2 (CO2)	2	2	3	2	1	2	1	1	--
Execute DDL Commands to manage database using SQL	LLO 3.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute DML Commands to manipulate data using SQL	LLO 4.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute DCL Commands to control the access to data using SQL	LLO 5.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute TCL Commands to control transactions on data using SQL	LLO 6.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Implement Queries using Arithmetic operators	LLO 7.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Implement Logical operators to apply various conditions in query	LLO 8.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Implement Relational operators to apply various conditions in query	LLO 9.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Write Queries to implement SET operations using SQL	LLO 10.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute queries using String functions	LLO 11.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute queries using Arithmetic functions	LLO 12.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Implement queries using Date and Time functions	LLO 13.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Implement queries using Aggregate functions	LLO 14.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute Queries for ordering and grouping data	LLO 15.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Execute the queries based on Inner & outer join	LLO 16.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Create and manage Views for faster access on relations	LLO 17.1	CO304.3 (CO3)	1	2	2	2	--	2	1	1	--
Implement PL/SQL program using Conditional Statements	LLO 18.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Implement PL/SQL program using Iterative Statements	LLO 19.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Implement PL/SQL program using Sequential Control	LLO 20.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Create implicit & explicit cursors	LLO 21.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1

Implement PL/SQL program based on Exception Handling (Predefined exceptions)	LLO 22.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Implement PL/SQL program based on Exception Handling (user defined exceptions)	LLO 23.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Create Procedures and stored procedures for modularity	LLO 24.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Create function for given database	LLO 25.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Implement triggers for given database	LLO 26.1	CO304.4 (CO4)	1	3	3	2	1	3	2	2	1
Implement SQL queries for database administration	LLO 27.1	CO304.5 (CO5)	1	1	2	2	2	2	1	1	--

• **Practical/Laboratory Plan:**

Sr No	COs and LLOs	Practical Titles	Planned Dates		Remark & Faculty Sign with Assessment Date
			From	To	
1	CO1 LLO 1.1	* Install the provided database software	A-03/07/2026 B-01/07/2026 C-02/07/2026	A-03/07/2026 B-04/07/2026 C-06/07/2026	
2	CO3 LLO 1.3	*- Draw ER diagram for given problem - Normalize the relation up to 3NF 1) Create Database for given application 2) Create tables for the given application 3) Assign Primary key for created table 4) Modify the table as per the application needs	A-07/07/2026 B-04/07/2026 C-06/07/2026	A-07/07/2026 B-08/07/2026 C-09/07/2026	
3	CO3 LLO 1.3	* Write queries using DDL Statements for following operations – 1) Create, alter, truncate, drop ,rename Table 2) Apply Key Constraints for suitable relation.	A-07/07/2026 B-08/07/2026 C-09/07/2026	A-10/07/2026 B-11/07/2026 C-13/07/2026	
4	CO3 LLO 1.3	* Write queries using DML Statements for following operations 1) Select, Insert, delete, update, table 2) Apply Key Constraints for suitable relation.	A-10/07/2026 B-11/07/2026 C-13/07/2026	A-14/07/2026 B-15/07/2026 C-16/07/2026	
5	CO3 LLO 1.3	* Write queries using DCL Statements for following operations – 1) Grant, Revoke	A-14/07/2026 B-15/07/2026 C-16/07/2026	A-17/07/2026 B-18/07/2026 C-20/07/2026	
6	CO3 LLO 1.3	* Write queries using DCL Statements for following operations - Commit, Rollback, Savepoint	A-17/07/2026 B-18/07/2026 C-20/07/2026	A-21/07/2026 B-22/07/2026 C-23/07/2026	
7	CO3 LLO 1.3	Write Queries using built-in Arithmetic operators.	A-21/07/2026 B-22/07/2026 C-23/07/2026	A-24/07/2026 B-25/07/2026 C-27/07/2026	
8	CO3 LLO 1.3	Apply built-in Logical operators on given data	A-24/07/2026 B-25/07/2026 C-27/07/2026	A-28/07/2026 B-29/07/2026 C-30/07/2026	
9	CO3 LLO 1.3	Apply built-in relational operators on given data	A-28/07/2026 B-29/07/2026 C-30/07/2026	A-28/07/2026 B-01/08/2026 C-03/08/2026	
10	CO3 LLO 1.3	* Use following Set operators to perform different operations.	A-31/07/2026 B-01/08/2026 C-03/08/2026	A-04/08/2026 B-05/08/2026 C-06/08/2026	
11	CO3 LLO 1.3	Write SQL Queries using built-in String functions	A-04/08/2026 B-05/08/2026 C-06/08/2026	A-07/08/2026 B-08/08/2026 C-10/08/2026	

12	CO3 LLO 1.3	Write SQL Queries using built-in Arithmetic functions	A-07/08/2026 B-08/08/2026 C-10/08/2026	A-11/08/2026 B-12/08/2026 C-13/08/2026	
13	CO3 LLO 1.3	Write Queries using built-in Date and Time functions	A-11/08/2026 B-12/08/2026 C-13/08/2026	A-11/08/2026 B-12/08/2026 C-17/08/2026	
14	CO3 LLO 1.3	Write Queries using SQL built-in Aggregate functions	A-14/08/2026 B-19/08/2026 C-17/08/2026	A-18/08/2026 B-19/08/2026 C-20/08/2026	
15	CO3 LLO 1.3	* Implement Queries Using different Where, Having, Group by, & Order by clauses	A-14/08/2026 B-19/08/2026 C-20/08/2026	A-18/08/2026 B-22/08/2026 C-24/08/2026	
16	CO3 LLO 1.3	* Implement SQL queries for Inner and Outer Join	A-18/08/2026 B-22/08/2026 C-24/08/2026	A-21/08/2026 B-26/08/2026 C-27/08/2026	
17	CO3 LLO 1.3	* Create and Execute Views, Sequences and Indexes in SQL.	A-21/08/2026 B-26/08/2026 C-27/08/2026	A-25/08/2026 B-29/08/2026 C-31/08/2026	
18	CO4 LLO 1.4	* Write a PL/SQL program using Conditional Statements- if, if then else nested if, if else if else	A-25/08/2026 B-29/08/2026 C-31/08/2026	A-28/08/2026 B-02/09/2026 C-03/09/2026	
19	CO4 LLO 1.4	* Write a PL/SQL program using Iterative Statements- loop, for, do-while, while	A-28/08/2026 B-02/09/2026 C-03/09/2026	A-01/09/2026 B-05/09/2026 C-07/09/2026	
20	CO4 LLO 1.4	Write a PL/SQL program using Sequential Control- switch, continue, goto	A-01/09/2026 B-05/09/2026 C-07/09/2026	A-04/09/2026 B-09/09/2026 C-10/09/2026	
21	CO4 LLO 1.4	* Write a PL/SQL code to implement implicit & explicit cursors	A-04/09/2026 B-09/09/2026 C-10/09/2026	A-08/09/2026 B-12/09/2026 C-14/09/2026	
22	CO4 LLO 1.4	* Write a PL/SQL program based on Exception Handling (Pre-defined exceptions)	A-08/09/2026 B-12/09/2026 C-14/09/2026	A-11/09/2026 B-16/09/2026 C-17/09/2026	
23	CO4 LLO 1.4	* Write a PL/SQL program based on Exception Handling (user defined exceptions)	A-15/09/2026 B-16/09/2026 C-17/09/2026	A-18/09/2026 B-19/09/2026 C-21/09/2026	
24	CO4 LLO 1.4	* Write a PL/SQL code to create Procedures and stored procedures	A-22/09/2026 B-19/09/2026 C-21/09/2026	A-25/09/2026 B-23/09/2026 C-24/09/2026	
25	CO4 LLO 1.4	* Write a PL/SQL code to create functions.	A-29/09/2026 B-26/09/2026 C-28/09/2026	A-02/10/2026 B-30/09/2026 C-30/09/2026	
26	CO4 LLO 1.4	* Write a PL/SQL code to create triggers for given database.	A-06/10/2026 B-03/10/2026 C-05/10/2026	A-09/10/2026 B-07/10/2026 C-08/10/2026	
27	CO5 LLO 1.5	Execute DCL commands using SQL 1) Create Users 2) Grant Privileges to users 3) Revoke Privileges to users	A-09/10/2026 B-10/10/2026 C-12/10/2026	A-13/10/2026 B-14/10/2026 C-15/10/2026	

Note: -Out of above suggestive LLOs -'*' Marked Practicals (LLOs) Are mandatory.

-Minimum 80% of above list of lab experiment are to be performed.

-Judicial mix of LLOs are to be performed to achieve desired outcomes.

● **Formative & Summative Assessment Criteria:**

● **Theory Assessment:**

a) **Formative assessment (TH-FA):**

- Two offline class tests each of 30 marks will be conducted as per MSBTE guidelines. The average of two class test marks will be considering for final TH-FA(Average) out of 30 marks.

b) **Summative Assessment (TH- SA):**

- The comprehensive End semester assessment will be done by MSBTE by a Theory written Examination for 70 marks. Question Paper setting and the Answer book Assessment is performed by MSBTE.

- Final Theory Score out of 100 Marks will be derived as the total score as below:
TH-SA [out of 70] + TH- FA [Average out of 30] = 100 Marks

• Practical Assessment:

- Formative Assessment (FA) of each practical/experiment will be performed progressively for 50 marks. The assessment will be performed based on the Regularity in Practical Performance, Tool Selection Ability, Use of Appropriate tool to perform the Identified tasks, Algorithm/Solution developed, Quality of output achieved, Answer to sample questions and Submit report in total time.
- Final Term Work (FA-PR) of 50 marks is calculated based on scores in Formative Assessment for all practicals/experiments as:
 - Term Work Marks (FA-PR)** = ((Sum of Total Marks Scored in FA x Max Marks by Scheme) / (Total Number of Experiments)) x (Max marks for each Practical))
- Self-learning Activities (SLA) includes Micro project / Assignment / other activities related to subject/course and it will be evaluated out of 25 Marks.
A Summative (comprehensive) Assessment (SA-PR) of Practical will be performed as End Semester Examination (ESE). The SA-PR will be for 50 Marks with MSBTE guidelines at the end of semester. The schedule of MSBTE Practical ESE will be display on Notice board prior to examination.

• References:

1. Suggested Books for Reference:

Sr. No	Author	Title of the Book	Publisher
1.	Henry F. Korth	Database System Concepts	McGraw Hill Education ISBN : 9780078022159
2.	Ivan Bayross	SQL, PL/SQL – The Programming Language of Oracle	BPB Publication ISBN 10: 8170298997
3.	ISRD Group	Introduction to Database Management Systems	McGraw Hill Education ISBN 10:0070591199
4.	Catherine Creary, Christopher Allen	Introduction to Relational Database & SQL Programming	Tata McGraw Hill Education, New Delhi,
5.	Vikram Vaswani	Complete Reference: MySQL	Tata McGraw Hill Education, New Delhi, 2015

2. Learning Websites URLs & Portals:

Sr. No	Website /Portal Link/URL	Description
1	https://nptel.ac.in/courses/106105175	Data Base Management System
2	https://www.w3schools.com/sql/	SQL Tutorial
3	https://www.tutorialspoint.com/sql/index.htm	SQL Programming Language
4	https://ict.iitk.ac.in/courses/fundamentals-of-database-system/	Fundamentals of dbms
5	http://www.studytonight.com/dbms/overview-of-dbms.php	Overview of DBMS
6	http://www.slideshare.net/signer/relational-database-design	Relational database design
7	http://www.tutorialspoint.com/dbms/database_normalization.html	Database Normalization
8	http://www.beginnersbook.com/2015/04/dbms-tutorial/	DBMS Tutorial

3. URLs of referred YouTube Videos:

Sr. No	URL/YouTube Link	Topic/ Description
1	https://www.youtube.com/watch?v=uKmfjzKoh2k	PL-SQL Loops - For Loop, While Loop, Simple PL-SQL
2	https://www.youtube.com/watch?v=Oj7344m_fy0	PLSQL Cursor, Implicit and Explicit Cursor, How to Open,
3	https://www.youtube.com/watch?v=KD0t843oQIw	PLSQL Trigger, Row and Statement Level Trigger, How to
4	https://www.youtube.com/watch?v=wAEL5RnX_Yc	Database Security Concepts
5	https://www.youtube.com/watch?v=Z57b-1HLSU8	ACID Properties in DBMS acid properties in dbms in hindi
6	https://www.youtube.com/watch?v=8JNH_ZGbnfY	Database Backup and Recovery Presentation
7	https://www.youtube.com/watch?v=FR4QIeZaPeM	What is Database & SQL
8	https://www.youtube.com/watch?v=p3yJZH8_bsc	Concept of Keys in DBMS - Super, Primary, Candidate,
9	https://www.youtube.com/watch?v=oylHRgBDFnc	Basic Concept of Normalization

10	https://www.youtube.com/watch?v=w4zov_X9ckQ	Codd Rules (Hindi) DBMS
11	https://www.youtube.com/watch?v=zYH-e6tUYbw	Introduction to Joins and its types Need of Joins with
12	https://www.youtube.com/watch?v=Yr4pHPZCshA	QL Aggregate Functions - SUM, AVG(n), COUNT, MIN,
13	https://www.youtube.com/watch?v=zjqL5V2BKbY	Types of SQL Function
14	https://www.youtube.com/watch?v=uKmfjzKoh2k	PL-SQL Loops - For Loop, While Loop, Simple PL-SQL
15	https://www.youtube.com/watch?v=Oj7344m_fy0	PLSQL Cursor, Implicit and Explicit Cursor, How to Open,
16	https://www.youtube.com/watch?v=KD0t843oQlw	PLSQL Trigger, Row and Statement Level Trigger, How to

4. Self-Prepared Video URLs:

Sr. No	URL/YouTube Link	Topic/ Description
1	https://youtu.be/KA0og09KzCc	INTRODUCTION TO DBMS
2	https://youtu.be/m36WAmmoNIU	SQL Functions Part 1
3	https://youtu.be/aP-ZK7Z_B1Y	PL SQL Programming Part 1
4	https://youtu.be/YoKLMmZajrY	SQL Programming Part 2
5	https://youtu.be/2FASXFj-6Rk	SQL Programming Part 3
6	https://youtu.be/Sj2YDes04mY	SQL Queries Part 1
7	https://youtu.be/Am6QTqejB0g	DMS Practical 3 ER Diagram
8	https://youtu.be/szlr5kvE8E	PL/SQL Cursor
9	https://youtu.be/k9XCRpPRKIQ	DMS Practical 4 DDL Commands

1. Laboratory Equipment / Instruments / Tools / Software /Materials Required

Sr. No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Desktop Computer with basic configuration	All
2	Printer	All
3	Oracle 10g	All
4	AnyLogic PLE (Free for simulating database behavior)	All
5	Simcad Pro Education (Free for simulating database behavior)	All
6	MySQL Workbench Community Edition (A free visual tool for designing, developing, and managing MySQL databases)	All
7	Virtual Lab-Pune Institute of Computer Technology https://dmsl-virtual-lab.vercel.app/	1,4,17,24,26

• Tools to Use for Practical Teaching-Learning, Assessment and Evaluation:

- **MKCL ERA LMS:** LMS to share practical study material, notes, assignments with students. Teachers can create, distribute and teach the practical learning content as per the curriculum.
- MSBTE Practical Progressive Assessment (K3)

Mr. A. D. Talole
(Name & signature of staff)

Prof. M. P. Bhosale
(Name & signature of HOD)

CC-

1. Lab File 2. DMS - 313315 Course File 3. Notice Board / ERP 4. Institute Website / CIAAN Coordinator
5. Progressive Assessment

Maharashtra State Board of Technical Education, Mumbai

Tutorial Plan (TUT)/ Course Information Sheet (CIS)

K-2B

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Course Index: CI304 **Learning Hrs:** 16

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CO304.4 (CO4)	LLO 20.1	Implement PL/SQL program using Sequential Control
CO304.4 (CO4)	LLO 21.1	Create implicit & explicit cursors

CO304.4 (CO4)	LLO 22.1	Implement PL/SQL program based on Exception Handling (Predefined exceptions)
CO304.4 (CO4)	LLO 23.1	Implement PL/SQL program based on Exception Handling (user defined exceptions)
CO304.4 (CO4)	LLO 24.1	Create Procedures and stored
CO304.4 (CO4)	LLO 25.1	Create function for given database
CO304.4 (CO4)	LLO 26.1	Implement triggers for given database
CO304.5 (CO5)	LLO 27.1	Implement SQL queries for database administration

• **Tutorial Plan:**

Sr No	LLOs	Practical Titles/Tutorial Title	Planned Dates		Remark
			From	To	
1	LLO 1.1	Install database software	03/07/2026	10/07/2026	
2	LLO 2.1	Create Database schema for given application	10/07/2026	17/07/2026	
3	LLO 3.1, 4.1	Execute DDL, DML Commands to manage database using SQL	17/07/2026	24/07/2026	
4	LLO 5.1, 6.1	Execute DCL, TCL Commands to control the access to data using SQL	24/07/2026	31/07/2026	
5	LLO 7.1, 8.1	Implement Queries using Arithmetic, Logical operators	31/07/2026	07/08/2026	
6	LLO 9.1, 10.1	Implement Relational operators & SET operator to apply various conditions in query	07/08/2026	14/08/2026	
7	LLO 11.1, 12.1	Execute queries using String & Arithmetic functions	14/08/2026	21/08/2026	
8	LLO 13.1, 14.1	Implement queries using Date and Time & Aggregate functions	21/08/2026	28/08/2026	
9	LLO 15.1	Execute Queries for ordering and grouping data	28/08/2026	04/09/2026	
10	LLO 16.1	Execute the queries based on Inner & outer join	04/09/2026	11/09/2026	
11	LLO 17.1	Create and manage Views for faster access on relations	11/09/2026	18/09/2026	
12	LLO 18.1, 19.1, 20.1	Implement PL/SQL program using Conditional Statements, Iterative statements & Sequential Control statements	18/09/2026	25/09/2026	
13	LLO 21.1, 22.1	Create implicit & explicit cursors	25/09/2026	02/10/2026	
14	LLO 22.1, 23.1	Implement PL/SQL program based on Exception Handling (Predefined & user defined exceptions)	02/10/2026	09/10/2026	
15	LLO 24.1, 25.1	Create Procedures and stored procedures for modularity & Create function for given database	09/10/2026	16/10/2026	
16	LLO 26.1, 27.1	Implement triggers for given database & Implement SQL queries for database administration	16/10/2026	16/10/2026	

• **Formative & Summative Assessment Criteria:**

• **Theory Assessment:**

a) **Formative assessment (TH-FA):**

- Two offline class tests each of 30 marks will be conducted as per MSBTE guidelines. The average of two class test marks will be considering for final TH-FA(Average) out of 30 marks.

b) **Summative Assessment (TH- SA):**

- The comprehensive End semester assessment will be done by MSBTE by a Theory written Examination for 70 marks. Question Paper setting and the Answer book Assessment is performed by MSBTE.
- Final Theory Score out of 100 Marks will be derived as the total score as below:

$$\text{TH-SA [out of 70]} + \text{TH- FA [Average out of 30]} = 100 \text{ Marks}$$

• Practical Assessment:

- Formative Assessment (FA) of each practical/experiment will be performed progressively for 50 marks. The assessment will be performed based on the Regularity in Practical Performance, Tool Selection Ability, Use of Appropriate tool to perform the Identified tasks, Algorithm/Solution developed, Quality of output achieved, Answer to sample questions and Submit report in total time.
- Final Term Work (FA-PR) of 50 marks is calculated based on scores in Formative Assessment for all practicals/experiments as:

$$\text{Term Work Marks (FA-PR)} = ((\text{Sum of Total Marks Scored in FA} \times \text{Max Marks by Scheme}) / (\text{Total Number of Experiments})) \times (\text{Max marks for each Practical}))$$

- Self-learning Activities (SLA) includes Micro project / Assignment / other activities related to subject/course and it will be evaluated out of 25 Marks.

A Summative (comprehensive) Assessment (SA-PR) of Practical will be performed as End Semester Examination (ESE). The SA-PR will be for 50 Marks with MSBTE guidelines at the end of semester. The schedule of MSBTE Practical ESE will be display on Notice board prior to examination.

• References:

1. Suggested Books for Reference:

Sr. No	Author	Title of the Book	Publisher
1.	Henry F. Korth	Database System Concepts	McGraw Hill Education ISBN : 9780078022159
2.	Ivan Bayross	SQL, PL/SQL – The Programming Language of Oracle	BPB Publication ISBN 10: 8170298997
3.	ISRD Group	Introduction to Database Management Systems	McGraw Hill Education ISBN 10:0070591199
4.	Catherine Creary, Christopher Allen	Introduction to Relational Database & SQL Programming	Tata McGraw Hill Education, New Delhi,
5.	Vikram Vaswani	Complete Reference: MySQL	Tata McGraw Hill Education, New Delhi, 2015

2. Learning Websites URLs & Portals:

Sr. No	Website /Portal Link/URL	Description
1	https://nptel.ac.in/courses/106105175	Data Base Management System
2	https://www.w3schools.com/sql/	SQL Tutorial
3	https://www.tutorialspoint.com/sql/index.htm	SQL Programming Language
4	https://ict.iitk.ac.in/courses/fundamentals-of-database-system/	Fundamentals of dbms
5	http://www.studytonight.com/dbms/overview-of-dbms.php	Overview of DBMS
6	http://www.slideshare.net/signer/relational-database-design	Relational database design
7	http://www.tutorialspoint.com/dbms/database_normalization.html	Database Normalization
8	http://www.beginnersbook.com/2015/04/dbms-tutorial/	DBMS Tutorial

3. URLs of referred YouTube Videos:

Sr. No	URL/YouTube Link	Topic/ Description
1	https://www.youtube.com/watch?v=uKmfjzKoh2k	PL-SQL Loops - For Loop, While Loop, Simple PL-SQL
2	https://www.youtube.com/watch?v=Oj7344m_fy0	PLSQL Cursor, Implicit and Explicit Cursor, How to Open,
3	https://www.youtube.com/watch?v=KD0t843oQIw	PLSQL Trigger, Row and Statement Level Trigger, How to
4	https://www.youtube.com/watch?v=wAEL5RnX_Yc	Database Security Concepts
5	https://www.youtube.com/watch?v=Z57b-1HLSU8	ACID Properties in DBMS acid properties in dbms in hindi
6	https://www.youtube.com/watch?v=8JNH_ZGbnfY	Database Backup and Recovery Presentation
7	https://www.youtube.com/watch?v=FR4QIeZaPeM	What is Database & SQL
8	https://www.youtube.com/watch?v=p3yJZH8_bsc	Concept of Keys in DBMS - Super, Primary, Candidate,
9	https://www.youtube.com/watch?v=oylHRgBDfNc	Basic Concept of Normalization
10	https://www.youtube.com/watch?v=w4zov_X9ckQ	Codd Rules (Hindi) DBMS
11	https://www.youtube.com/watch?v=zYH-e6tUYbw	Introduction to Joins and its types Need of Joins with

12	https://www.youtube.com/watch?v=Yr4pHPZCshA	QL Aggregate Functions - SUM, AVG(n), COUNT, MIN,
13	https://www.youtube.com/watch?v=zjqL5V2BKbY	Types of SQL Function
14	https://www.youtube.com/watch?v=uKmfjzKoh2k	PL-SQL Loops - For Loop, While Loop, Simple PL-SQL
15	https://www.youtube.com/watch?v=Oj7344m_fy0	PLSQL Cursor, Implicit and Explicit Cursor, How to Open,
16	https://www.youtube.com/watch?v=KD0t843oQlw	PLSQL Trigger, Row and Statement Level Trigger, How to

4. Self-Prepared Video URLs:

Sr. No	URL/YouTube Link	Topic/ Description
1	https://youtu.be/KA0og09KzCc	INTRODUCTION TO DBMS
2	https://youtu.be/m36WAmmoNIU	SQL Functions Part 1
3	https://youtu.be/aP-ZK7Z_B1Y	PL SQL Programming Part 1
4	https://youtu.be/YoKLmMzajrY	SQL Programming Part 2
5	https://youtu.be/2FASXFj-6Rk	SQL Programming Part 3
6	https://youtu.be/Sj2YDes04mY	SQL Queries Part 1
7	https://youtu.be/Am6QTqeJB0g	DMS Practical 3 ER Diagram
8	https://youtu.be/szlr5kvE8E	PL/SQL Cursor
9	https://youtu.be/k9XCRpPRKIQ	DMS Practical 4 DDL Commands

1. Laboratory Equipment / Instruments / Tools / Software /Materials Required

Sr. No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Desktop Computer with basic configuration	All
2	Printer	All
3	Oracle 10g	All
4	AnyLogic PLE (Free for simulating database behavior)	All
5	Simcad Pro Education (Free for simulating database behavior)	All
6	MySQL Workbench Community Edition (A free visual tool for designing, developing, and managing MySQL databases)	All
7	Virtual Lab-Pune Institute of Computer Technology https://dmsl-virtual-lab.vercel.app/	1,4,17,24,26

• Tools to Use for Practical Teaching-Learning, Assessment and Evaluation:

- **MKCL ERA LMS:** LMS to share practical study material, notes, assignments with students. Teachers can create, distribute and teach the practical learning content as per the curriculum.
- MSBTE Practical Progressive Assessment (K3)

Mr. A. D. Talole
(Name & signature of staff)

Prof. M. P. Bhosale
(Name & signature of HOD)

CC-

1. Lab File 2. DMS - 313315 Course File 3. Notice Board / ERP 4. Institute Website / CIAAN Coordinator
5. Progressive Assessment