

Academic Year: 2026-27

Institute Name : K. K. Wagh Polytechnic, Nashik

Programme and Code: Artificial Intelligence and Machine Learning(AN)

Course Name: Database Management System

Semester: IIIrd Scheme: 'K' Allocated Hrs: 45

Class: SYAN-NOVA

Date: 15/06/2026

Institute Code:0078

Course Index: 301**Course Abbr. Code:** DMS-313302

Name of Faculty: Mrs. J. S. Mahajan

● **Teaching and Examination Scheme:**

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme						Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH	Paper Duration		Theory				Based on LL & TL				Based on SL		Total Marks	
				CL	TL	LL					Practical				SLA							
FA-TH	SA-TH	Total					FA-PR		SA-PR		SLA											
Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min											
313302	DATABASE MANAGEMENT SYSTEM	DMS	DSC	3	1	4	2	10	5	3	30	70	100	40	25	20	25#	10	25	10	200	

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH- Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, SLA - Self Learning Assessment

Legends: # External Assessment,

- **Course Outcomes (COs) and Theory Learning Outcomes (TLOs):**

By learning course Database Management System (DMS-313302), Second Year students will be able to:

CO No.	TLO No.	Course Outcomes (COs) / Theory Learning Outcomes (TLOs)
CO301.1		Explain concept of database management system.
	1.1	Explain given database concept.
	1.2	Explain Overall structure of DBMS
	1.3	Describe architecture of database.
CO301.2		Design the database for given problem.
	2.1	Explain relational structure of database
	2.2	State types of keys with example.
	2.3	Draw ER diagrams for given problem
	2.4	Explain different normalization forms.
CO301.3		Manage database using SQL.
	3.1	Write SQL queries using DDL, DML, DCL and TCL.
	3.2	Write SQL queries to join relations.
	3.3	Write SQL queries for ordering and grouping data.
	3.4	Use various class of operators in SQL.
	3.5	Create schema objects for performance tuning.
CO301.4		Implement PL/SQL codes for given application.
	4.1	Use control Structures in PL-SQL.
	4.2	Handle different types of exceptions.
	4.3	Explain various types of cursors
	4.4	Create Procedure, Function on given problem.
	4.5	Explain types of triggers with examples
CO301.5		Apply security and backup methods on database
	5.1	Implement SQL queries for database administration
	5.2	Explain concept of various types database backup processes.

	5.3	Describe various terms related to advanced database concepts
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● Teaching Plan:

Unit No. (Allotted Hrs.) Marks	Theory Learning Outcomes (TLO)	Title/Topic Details and Course Outcome [CO]	Plan (From -To & No. of Lectures)	Actual Execution (From-To & No. of Lectures)	Teaching Method/ Media/ Tools	Remark
01 (06) 12M	1.1	Unit - I Introduction To Database System [CO301.1] 1.1 Database concepts:-Data, Database, Database management system, File system Vs DBMS, Applications of DBMS, Data Abstraction, Data Independence, Database Schema, The Codd's rules, Overall structure of DBMS	02/07/26 To 04/07/26 (02)		Chalk Board, PPT+ LCD, MKCL ERA	
	1.2,1.3	*Types of Database: NoSQL ,cloud based database 1.2 Architecture:- Two tier and Three tier architecture of database.	06/07/26 To 09/07/26 (02)		Chalk Board, PPT+ LCD	
	1.2	1.3 Data Models:- Hierarchical, Networking, Relational Data Models.	11/07/26 To 13/07/26 (02)		Chalk Board, PPT+ LCD	
02 (08) 12M	2.1	Unit - II Relational Data Model [CO301.2] 2.1 Relational Structure :- Tables (Relations), Rows (Tuples), Domains, Attributes, Entities,*Cardinality, *Degree	16/07/26 (01)		Chalk Board, PPT +LCD	
	2.2	2.2 Keys :- Super Keys, Candidate Key, Primary Key, Foreign Key.	18/07/26 To 20/07/26 (02)		Chalk Board, PPT+ LCD	
	2.2	2.3 Data Constraints :- Domain Constraints ,Referential Integrity Constraints	23/07/26 (01)		Chalk Board, PPT+ LCD	
	2.3	2.4 Entity Relationship Model : - Strong Entity set, Weak Entity set, Types of Attributes, Symbols for ER diagram, ER Diagrams	25/07/26 To 27/07/26 (02)		Chalk Board, PPT+ LCD	
	2.4	* Denormalization structure 2.5 Normalization:- Functional dependencies, Normal forms: 1NF, 2NF, 3NF	30/07/26 To 1/08/26 (02)		Chalk Board, PPT+ LCD	
03 (12) 18M	3.1	Unit - III Interactive SQL and Performance Tuning [CO301.3] 3.1 SQL: -Data-types, Data Definition Language (DDL), Data Manipulation language (DML), Data Control Language (DCL), Transaction Control Language (TCL)	03/08/26 To 06/08/26 (02)		Chalk Board, PPT+ LCD, Demo MKCL ERA	

	3.2	3.2 Clauses & Join:- Different types of clauses - Where, Group by ,Order by, Having. Joins: Types of Joins, Nested queries.	08/08/26 To 17/08/26 (03)		Chalk Board, PPT+ LCD	
	3.4	3.3 Operators:- Relational, Arithmetic, Logical, Set operators. *Pattern matching, *Range searching Operator	20/08/26 To 22/08/26 (02)		Chalk Board, PPT+ LCD	
	3.4	3.4 Functions:- Numeric , Date and time, String functions, Aggregate Functions.	24/08/25 To 27/08/26 (02)		Chalk Board, PPT+	
	3.5	3.5 Views, Sequences, Indexes: - Views : Concept ,Create ,Update, Drop Views. Sequences :- Concept ,Create, Alter , Drop, Use of Sequence in table, Index: Concept Types of Index ,Create ,Drop Index	29/08/26 To 3/09/26 (03)		Chalk Board, PPT+ LCD, MKCL ERA	
04 (12) 18M	4.1	Unit - IV PL/SQL Programming [CO301.4] 4.1 Introduction of PL/SQL: - Advantages of PL/SQL, The PL/SQL Block Structure, PL/SQL Data Types, Variable , Constant	05/09/26 To 07/09/26 (02)		Chalk Board, PPT+ LCD,	
	4.1	4.2 Control Structure:- Conditional Control, Iterative Control, Sequential Control.	10/09/26 To 12/09/26 (02)		Chalk Board, PPT+ LCD	
	4.2	4.3 Exception handling: - Predefined Exception, User defined Exception.	17/09/26 To 19/09/26 (02)		Chalk Board, PPT+ LCD	
	4.3	4.4 Cursors:- Implicit and Explicit Cursors, Declaring, opening and closing cursor, fetching a record from cursor ,cursor for loops, parameterized cursors	21/09/26 To 24/09/26 (02)		Chalk Board, PPT+ LCD	
	4.4	4.5 Procedures:- Advantages, Create, Execute and Delete a Stored Procedure	26/09/26 (01)		Chalk Board, PPT+	
	4.4	4.6 Functions:- Advantages, Create, Execute and Delete a Function	28/09/26 (01)		Chalk Board, PPT+	
	4.5	4.7 Database Triggers :- Use of Database Triggers, Types of Triggers, Create Trigger, Delete Trigger	28/09/26 To 01/10/26 (02)		Chalk Board, PPT+ LCD	
05 (07) 10M	5.1	Unit - V Database Administration [CO301.5] 5.1 Introduction to database administration:- Types of database users, Create and delete users, Assign privileges to users	01/10/26 To 03/10/26 (02)		Chalk Board, PPT+ LCD, Demo	
	5.1	*ACID Properties in DBMS 5.2 Transaction: Concept, Properties & States of Transaction	05/10/26 (01)		Board, PPT+	

	5.2	5.3 Database Backup: Types of Failures, Causes of Failure, Database backup introduction, types of database backups: Physical & Logical	05/10/26 To 08/10/26 (02)		Chalk Board, PPT+ LCD, MKCL ERA	
	5.3	5.4 Data Recovery – Recovery concepts , recovery techniques roll forward ,Rollback * Types of Recovery	10/10/26 (01)		Chalk Board, PPT+ LCD	
	5.3	5.5 Overview of Advanced database concepts:- Data Warehouse ,Data lakes , Data mining, Big data ,Mongo DB , DynamoDB,	12/10/26 (01)		Chalk Board, PPT+ LCD	

*** Extra Topics**

● COs – POs & PSOs MATRIX FORM:

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability & Environment	PO-6 Project Management	PO-7 Lifelong Learning	PSO- 1	PSO- 2
CO1	3	-	-	-	1	-	1	-	1
CO2	2	2	3	2	1	2	1	-	1
CO3	1	2	2	2	-	2	1	-	1
CO4	1	3	3	2	1	3	2	2	2
CO5	1	1	2	2	2	2	1	1	2
Legends :- High:03, Medium:02,Low:01, No Mapping: - PSO1: Apply fundamental concepts of Computer Engineering and Artificial Intelligence and machine learning to solve technical problems. PSO2: Implement the domain knowledge to achieve successful career as an engineering professional.									

● Direct Assessment Criteria:

✓ Self Learning

1. Implement PL/SQL code for relevant topics suggested by the teacher.
2. Complete any one course related to Database Management System on Infosys Springboard platform.

✓ Assignment

Solve an assignment on any relevant topic given by the teacher.

✓ Micro project

1. Develop a database for restaurant management system. The restaurant maintain catalogue for the list of food items and generate bill for the ordered food.
2. Prepare Invoice management system for electricity bill generation. Accept meter reading as inputs and generate respective bill amount for the same.

3. Design a database for registration and admission of patient for Hospital management system, draw ER diagram and normalize the database up to 3NF.

● **References:**

A. Books:

Sr.No	Author	Title	Publisher with ISBN Number
1	Henry F. Korth	Database System Concepts	McGraw Hill Education ISBN : 9780078022159
2	Ivan Bayross	SQL, PL/SQL – The Programming Language of Oracle	Oracle BPB Publication ISBN 10: 8170298997 BPB Publication ISBN 13: 9788170298991
3	ISRD Group	Introduction to Database Management Systems	McGraw Hill Education ISBN 10: 0070591199 McGraw Hill Education ISBN-13 : 978-0070591196

B. Software Learning Websites :

Sr.No	Link / Portal	Description
1	https://nptel.ac.in/courses/106105175	Database Management System
2	https://www.w3schools.com/sql/	SQL Tutorial
3	https://www.tutorialspoint.com/sql/index.html	SQL Programming Language

● **Tools :**

1. Google Classroom to share subject material to students.
2. Oracle Software
3. Quizzes using MKCL ERA LMS login.

Mrs. J. S. Mahajan
(Name & signature of Staff)

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(Name & signature of HOD)