

Syllabus: CSP 249, Database management System

School: SSCSE		Batch: 2024-2028	
Program: B.Tech		Current Academic Year: 2025-2026	
Branch: CSE		Semester: IV	
1	Course Code	CSE249	Course Name
2	Course Title	Database Management System	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status		
5	Course Objective	1. Develop the ability to design, 2. Implement and manipulate databases. 3. Introduce students to build database management systems. 4. Apply DBMS concepts to various examples and real-life applications.	
6	Course Outcomes	Students will be able to: CO1: Explain the basics concepts of databases. CO2: Demonstrate the knowledge of databases to E-R modelling. CO3: Ability to design entity relationships and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respective data. CO4: Apply normalization techniques to reduce redundancy from the database. CO5: To appraise the basic issues of Transaction processing, Serializability & concurrency control CO6: Design & develop database for real life problems	
7	Course Description	This course introduces database design and creation using a DBMS product. Emphasis is on normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and	

		implement normalized database structures by creating simple database tables, queries, reports, and forms.	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction to Databases:	
	A	Introduction of DBMS, Characteristics of DBMS, Data Models, Database languages, Database Administrator, Database Users.	CO1, CO2, CO6
	B	Three Schema architecture of DBMS, Data Models, Hierarchical, Network, Data independence and database language, DDL, DML, Data Modeling using Entity Relationship Model	
	C	Strong Entity, Weak entity, Specialization and generalization, converting ER Model to relational tables.	
	Unit 2	Relational Database Language and Interfaces:	
	A	Relational data model concepts, Concept of keys, Mapping Constraints	CO3
	B	Null Values, Domain Constraints, Referential Integrity Constraints	
	C	Unary Relational Operations: SELECT and PROJECT Relational Algebra Operations from Set Theory, Binary Relational Operations: JOIN and DIVISION, SQL.	
	Unit 3	Normalization in Design of Databases:	
	A	Functional Dependency, Different anomalies in designing a Database, loss less join decompositions	CO1, CO4, CO6
	B	Normalization: first second and third normal forms, BoyceCodd normal form, dependency preservation,	
	C	multi-valued dependencies, fourth normal forms, Inclusion dependencies,	
	Unit 4	Transaction Management:	
	A	Transaction processing system, schedule and recoverability, Testing of serializability,	CO5
	B	Serializability of schedules, conflict & view serializable schedule	
	C	Recovery from transaction failures, deadlock handling.	
	Unit 5	Concurrency Control	
	A	Two-Phase Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering	

	B	Multiversion Concurrency Control Techniques, Validation (Optimistic) Concurrency Control Techniques				CO5	
	C	Granularity of Data Items and Multiple Granularity Locking					
	Mode of examination	Theory					
	Weightage Distribution	CA (25)				E T E	
		Assessment 1 (10)	Assessment 2 (5)	Assignment 1 (5)	Assignment 2 (5)	7 5	
	Text book/s*	1. Korth, Silberschatz&Sudarshan, Data base Concepts, Tata McGraw-Hill, Latest Edition					
	Other References	1.Elmasri, Navathe, Fundamentals of Database Systems, Pearson Education Inc. 2.Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation and Management, Pearson Education, Third Edition.					

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	Understand the basics concepts of databases.	PO1, PO6, PSO1, PSO2
2.	Acquire the knowledge of databases to E-R modelling.	PO1, PO5 , PO6 ,PO9, PSO1, PSO2
3.	Ability to design entity relationships and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respective data.	PO1, PO2, PO3, PO5, PO6, PSO1, PSO2
4	Learn the basic concept of normalization & apply them to reduce redundancy from the database.	PO1, PO2, PO3, PO4, PO6 ,PO8 PO9, PSO3
5	To appraise the basic issues of Transaction processing, Serializability& concurrency control	PO1, PO2, PO3, PO5, PO6, PO8, PSO2
6	Design & develop database for real life problems	PO1, PO2, PO3, PO4, PO5, PO6 PO8 ,PO9 ,PO10 ,PO11, PSO3

PO and PSO mapping with level of strength for Course Name Database Management System (Course Code CSE 249)

	P O 1	P O 2	P O3	P O 4	P O 5	P O 6	P O7	P O 8	P O 9	P O 10	PO 11	PS O1	PS O2	P S O 3
COs	Eng in ee ri ng kn o wl ed ge	Pr ob le m an al ys is	De sig n/ de vel op me nt of sol uti on s	C on du ct in ve sti ga tio ns of com pl ex pro ble m s	M od er n to ol us age	T he en gi ne er and so ci ety	En vir on me nt and sus tai na bil ity	Et hi cs	In di vi du al and te a m w ork	C o m m un ic ati on :	Pro ject ma nag em ent and fina nce	Fa mil iar ity and pr act ica l pro fi cie nc y	Un der sta nd, ana lyse and deve lop	A pp ly st an da rd So ft war e
CO1	3	-	-	-	-	2	-	-	-	-	-	3	3	-
CO2	2	-	-	-	3	2	-	-	2	-	-	3	3	-
CO3	3	3	3	-	3	2	-	-	-	-	-	2	3	-
CO4	3	3	3	3	-	2	-	2	3	-	-	-	-	3
CO5	2	3	2	-	2	2	-	2	-	-	-	-	3	-
CO6	3	3	3	3	3	3	-	3	3	3	2	-	-	3

Average of non-zeros entry in following table (should be auto calculated).

Course Code/ Name	PO 1	PO 2	PO 3	PO 4	P O 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CSE 249/ DBMS	2.6 7	3	2.7 5	3	2.7 5	2.2	-	2.3	2.7	3	2	2.6	3	3

Strength of Correlation:***1. Addressed to Slight (Low=1) extent*** ***2. Addressed to Moderate (Medium=2) extent***
3. Addressed to Substantial (High=3) extent