

## COURSE PLAN & COURSE DATA SHEET

PROGRAM: B.Tech	DEGREE: Bachelor of
COURSE: Database Management System	SEMESTER: 2 <sup>nd</sup> sem CREDITS: 3 credit
COURSE CODE: CS-206 REGULATION:	COURSE TYPE: CORE /ELECTIVE / BREADTH/ S&H-CORE
COURSE AREA/DOMAIN: Computer Science	CONTACT HOURS: 3+1 (Tutorial) hours/Week.3+2
CORRESPONDING LAB COURSE CODE (IF ANY)yes	LAB COURSE NAME (IF ANY):Database Management System Lab

### PROGRAM EDUCATIONAL OBJECTIVES:

### SYLLABUS:

UNIT	DETAILS	HOURS
I	<b>INTRODUCTION:</b> Purpose of database system; characteristics of database approach; advantages of using DBMS; database concept and architecture; data abstraction, data models; instances and schema; data independence; schema architecture; database languages; database manager; database administrator; database users	8
II	<b>DATA MODELING:</b> Introduction to Hierarchical model, Network model. Relational model, E-R Model, Entity sets attributes and keys; relationships (ER); database modelling using entity; type role and structural constraints; weak and strong entity types; entity-relationship diagram-basic concepts; Enforcing Data Integrity Constraints; Relational-Algebra Operations; Introduction on views; Codd's Rules.	7
III	<b>NORMALIZATION&amp; SQL:</b> Database design process; relational database design; relation schema; anomalies in a database; functional dependencies; 1NF, 2NF, 3NF and BCNF. ; Reduction of an E-R schema to Tables; Introduction to SQL; basic queries in SQL; advanced queries in SQL; functions in SQL; basic data retrieval; updates in SQLs, views in SQL.	8
IV	<b>FILE ORGANIZATION:</b> indexing and hashing; overview of file organization techniques; secondary storage devices; operations in files; heap files and sorted files; Indexing and Hashing- Basic concepts; Static Hashing; Dynamic Hashing; ordered indices; single level ordered index; multi-level index.	10
V	<b>TRANSACTION PROCESSING &amp; QUERY PROCESSING:</b> Desirable properties of transactions; implementation of atomicity and durability; schedules and recoverability; serializability of schedules; concurrency control. Deadlock handling - detection and resolution.	9

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VI		
VII		
VIII		
TOTAL HOURS		42

<b>Teacher Centric Approach</b>			
<b>TC1: Chalk and Talk, Blended learning</b>	<b>TC2: PPT,</b>	<b>TC3: Video Lectures</b>	<b>TC4:</b>
<b>Learner Centric Approach:</b>			
<b>LC1: Assignment.</b>	<b>LC2: Mini project.</b>	<b>LC3: Quiz/Class test.</b>	<b>LC 4: Seminar on recent trends.</b>
<b>LC5: Group Task.</b>	<b>LC6: Others</b>		

## DETAILED SESSION PLAN

Lecture session/ Number	Topics to be covered	CO addressed	Teacher Centric Approach	Learner Centric Approach	References	Relevance with POs and PSOs
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1	IntroductionPurpose of database system	TC1	LC1,LC3	T1/R1/W1
2	characteristics of database approach	TC1	LC1,LC3	T1/T2/R1/W1
3	Advantages of using DBMS over file system	TC1,TC2	LC1,LC3	T1/T2/R1/W1
4	Database concept and architecture 2- Tier 3-SQL   DDL,DQL, DML.	TC1,TC2	LC1,LC3	T1/T2/R1/W1
5	DCI. TCI commands SQL   DDL,DQL, DML.	TC1,TC2	LC1,LC3	T1/T2/R1/W1
6	DCI. TCI commands SQL   DDL,DQL, DML.	TC1,TC2	LC1,LC3	T1/T2/R1/W1
7	Data Abstraction and Independence	TC1	LC1,LC3	T1/T2/R1/W1
8	Database languages database manager.	TC1	LC1,LC3	T1/T2/R1/W1
9	Databaseadministrator database users	TC1,TC2	LC1,LC3	T1/T2/R1/W1
10	Cardinality and Participation	TC1	LC1,LC3	T1/T2/R1/W1
11	Introduction to Hierarchical model	TC1	LC1,LC3	T1/T2/R1/W1
12	Network model. Relational model	TC1	LC1,LC3	T1/T2/R1/W1
13	E-R Model, Entity sets attributes and keys	TC1	LC1,LC3	T1/T2/R1/W1
14	relationships (ER); database modelling	TC1	LC1,LC3	T1/T2/R1/W1
15	type role and structural constraints	TC1	LC1,LC3	T1/T2/R1/W1
16	relationships (ER); database modelling	TC1	LC1,LC3	T1/T2/R1/W1
17	type role and structural constraints.	TC1,TC2	LC1,LC3	T1/T2/R1/W1
18	weak and strong entity types	TC1	LC1,LC3	T1/T2/R1/W1
19	entity-relationship diagram-basicconcepts	TC1	LC1,LC3	T1/T2/R1/W1
20	Enforcing Data Integrity Constraints	TC1	LC1,LC3	T1/T2/R1/W1
21	Relational-Algebra Operations	TC1,TC2	LC1,LC3	T1/T2/R1/W1
22	Introduction on views; Codd's Rules	TC1,TC2	LC1,LC3	T1/T2/R1/W1
23	<b>NORMALIZATION&amp; SQL</b> : Database design	TC1,TC2	LC1,LC3	T1/T2/R1/W1
24	relation schema; anomalies in a	TC1	LC1,LC3	T1/T2/R1/W1
25	1NF, 2NF, 3NF and BCNF.	TC1,TC2	LC1,LC3	T1/T2/R1/W1
26	Reduction of an E-R schema to Tables:	TC1	LC1,LC3	T1/T2/R1/W1

27	Reduction of an E-R schema to Tables.		TC1	LC1,LC3	T1/T2/R1/W1
28	basic queries in SQL; advanced queries in		TC1,TC2	LC1,LC3	T1/T2/R1/W1
29	<b>FILE ORGANIZATION:</b> indexing and hashing.		TC1,TC2	LC1,LC3	T1/T2/R1/W1
30	Indexing and Hashing- Basic concepts		TC1	LC1,LC3	T1/T2/R1/W1
31	Static Hashing; Dynamic Hashing		TC1,TC2	LC1,LC3	T1/T2/R1/W1
32	ordered indices; single level ordered index.		TC1,TC2	LC1,LC3	T1/T2/R1/W1
33	multi-level index.		TC1	LC1,LC3	T1/T2/R1/W1
34	<b>TRANSACTION PROCESSING &amp; QUERY</b>		TC1	LC1,LC3	T1/T2/R1/W1
35	Desirable properties of transactions.		TC1,TC2	LC1,LC3	T1/T2/R1/W1
36	implementation of atomicity and		TC1,TC2	LC1,LC3	T1/T2/R1/W1
37	schedules and recoverability.		TC1,TC2	LC1,LC3	T1/T2/R1/W1
38	serializability of schedules.		TC1	LC1,LC3	T1/T2/R1/W1
39	concurrency control		TC1	LC1,LC3	T1/T2/R1/W1
40	Deadlock handling		TC1	LC1,LC3	T1/T2/R1/W1
41	detection and resolution		TC1,TC2	LC1,LC3	T1/T2/R1/W1
42	Doubt Session				

### TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
1	Silberschatz A., Korth H. F. and Sudarshan S., "Database System Concepts", 6th edition, McGraw-Hill, International Edition, 2010
2	Steven Feuerstein, Bill Pribyl, "Oracle PL/SQL", O'Reilly Media, 4th Edition, 2005
3	"Fundamentals of Database Systems", Ramez Elmasri, Shamkant B. Navathe, Addison Wesley Publishing Edition
4	Elmasri R. and Navathe S. B., "Fundamentals of Database Systems", 6th edition, Addison-Wesley, Low Priced Edition, 2010
5	Date C. J., "An Introduction to Database Systems", 8th edition, Addison-Wesley, Low Priced Edition, 2003

## # WEB SOURCE REFERENCES (W):

1	<a href="https://www.geeksforgeeks.org/dbms/">https://www.geeksforgeeks.org/dbms/</a>
2	<a href="https://www.javatpoint.com/dbms-tutorial">https://www.javatpoint.com/dbms-tutorial</a>
3	<a href="https://www.tutorialspoint.com/dbms/index.htm">https://www.tutorialspoint.com/dbms/index.htm</a>
4	
5	
6	
7	

## COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
		There are <b>no prerequisites</b> for the program, but any experience in business, IT, or computer science is a bonus.	

## COURSE OBJECTIVES:

1	It presents methods for mining frequent patterns, associations, and correlations.
2	It then describes methods for data classification and prediction, and data-clustering approaches
3	It covers mining various types of data stores such as spatial, textual, multimedia, streams.
4	

## COURSE OUTCOMES:

S.NO	DESCRIPTION	PO(1..12) MAPPING	PSO(1..3) MAPPING
Cxxx.1	Describe the fundamental concepts of database system and construct Entity Relationship (E-R) model from specifications and convert an E-R schema to relation schema using mapping algorithm.	PO1,PO2,PO3,PO4,PO9,PO11	PSO1,PSO2
Cxxx.2	Identify query processing methodologies of Relational Algebra, Relational Calculus and determine the query optimization techniques	PO1,PO2,PO3,PO9,PO11	PSO1,PSO2
Cxxx.3	Construct simple and moderately advanced database queries using SQL and PL/SQL blocks for ensuring data	PO1,PO8,PO9,PO10	PSO2,PO3

	integrity and security		
Cxxx.4	Explain the concepts of normalization and apply such knowledge to the normalization of a database; and be able to identify basic database storage structures and access techniques	PO2,PO3,PO4,PO8	PSO1,PSO2
Cxxx.5	Implement the basic issues of transaction processing, concurrency control and recovery mechanisms in applications.	PO1,PO2,PO3,PO10	PSO1,PSO2
COURSE OVERALL PO/PSO MAPPING:			

### COURSE OUTCOMES VS POs MAPPING (DETAILED; HIGH:3; MEDIUM:2; LOW:1):

S.NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Cxxx.1	2	1	2	2	1	-	-	-	-	-	-	-	2	-	1
Cxxx.2	2	2	1	2	2	-	-	-	-	-	-	1	2	-	1
Cxxx.3	2	1	2	1	2	-	-	-	-	-	-	1	1	-	1
Cxxx.4	1	2	1	2	2	-	-	-	-	-	-	1	2	-	1
Cxxx.5	2	2	2	1	2	-	-	-	-	-	-	1	2	-	1
Cxxx*															

\* For Entire Course, PO & PSO Mapping

### POs & PSO REFERENCE:

PO1	Engineering Knowledge	PO7	Environment & Sustainability	PSO1	.....
PO2	Problem Analysis	PO8	Ethics	PSO2	.....
PO3	Design & Development	PO9	Individual & Team Work	PSO3	.....
PO4	Investigations	PO10	Communication Skills		
PO5	Modern Tools	PO11	Project Mgt. & Finance		
PO6	Engineer & Society	PO12	Life Long Learning		

### COs VS POs MAPPING JUSTIFICATION:

S.NO	PO/PSO MAPPED	LEVEL OF MAPPING	JUSTIFICATION
Cxxx.1			
Cxxx.2			
Cxxx.3			
Cxxx.4			
Cxxx.5			
Cxxx*			

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## GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS, POs & PSOs:

SNO	DESCRIPTION	PROPOSED ACTIONS
1		
2		
3		
4		
5		

*PROPOSED ACTIONS: TOPICS BEYOND SYLLABUS/ASSIGNMENT/INDUSTRY VISIT/GUEST LECTURER/NPTEL ETC*

## # TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

1	
2	
3	
4	
5	
6	
7	

## DELIVERY/INSTRUCTIONAL METHODOLOGIES:

<input type="checkbox"/> CHALK & TALK	<input type="checkbox"/> STUD. ASSIGNMENT	<input type="checkbox"/> WEB RESOURCES	<input type="checkbox"/> NPTEL/OTHERS
<input type="checkbox"/> LCD/SMART BOARDS	<input type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> WEBNIARS

## ASSESSMENT METHODOLOGIES-DIRECT

<input type="checkbox"/> ASSIGNMENTS	<input type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> TESTS/MODEL EXAMS	<input type="checkbox"/> UNIV. EXAMINATION
<input type="checkbox"/> STUD. LAB PRACTICES	<input type="checkbox"/> STUD. VIVA	<input type="checkbox"/> MINI/MAJOR PROJECTS	<input type="checkbox"/> CERTIFICATIONS
<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> OTHERS		

## ASSESSMENT METHODOLOGIES-INDIRECT

<input type="checkbox"/> ASSESSMENT OF COURSE OUTCOMES (BY FEEDBACK, ONCE)	<input type="checkbox"/> STUDENT FEEDBACK ON FACULTY (TWICE)
<input type="checkbox"/> ASSESSMENT OF MINI/MAJOR PROJECTS BY EXT. EXPERTS	<input type="checkbox"/> OTHERS

## # INNOVATIONS IN TEACHING/LEARNING/EVALUATION PROCESSES:

- 1.
- 2.
- 3.
- 4.
- 5.

Ms. Shivani Gupta

**Prepared by  
(Faculty)**

Dr. Ritu Sindhu

**Approved by  
(HOD)**

*# Additionally, the details to be compiled separately by the Departmental Coordinator for the entire Department.*