SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
FACULTY OF ENGINERING AND TECHNOLOGY
SCHOOL OF COMPUTING

COURSE PLAN
21CSC205P DATABASE MANAGEMENT SYSTEMS JANUARY – MAY 2024

Revision History:

Date	Version	Modification done	Modified by	Reviewed by	Authorized by
22-12-2023	1.0	Initial Release	Dr. S.Sadagopan	Dr. C.Lakshmi	

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1.0 General Details

Course Code: 21CSC205P

Course Title: Database Management Systems

Semester: IV

Course Time: JANUARY – MAY 2024

Slot: D

Day	Batch			
	Batch 1		Batch 2	
	Hour	Timing	Hour	Timing
Day order 1	-	-	-	-
Day order 2	-	-	-	-
Day order 3	4	10:40am – 11.30am	9	3:10pm – 4.00pm
Day order 4	6,7	12:30pm - 2:15pm	1,2	8:00am - 9:40am
Day order 5	5	11:35am - 12:25pm	10	4:00pm - 4:50pm

Location: University Building, Tech Park

Tutorial Assessment Hour: Batch 1: Day order 5 – 5th Hour & Batch 2: Day order 5 – 10th Hour

2.0 Reference Books

1. Abraham Silberschatz, Henry F Korth, S. Sudharshan, Databse Ssystem Concepts, Seventh Edition, Tata MCGraw Hill 2019.

2. Ramez Elmasri, Shamkanth B, Navathe, Fundamentals of Database Systems, Sixth Edition, Pearson Education, 2011.

3. CJ Date, A Kannan, S Swamynathan, An Introduction to database Systems, Eight Edition, Pearson Education, 2006.

4. RaghuramaKrishnan, Johannes Gehrke, Database Management Systems, 3rd Edition, Mc Graw Hill Education, 2003.

5. Principles of Database Systems, J.D.Ullman, Galgoti, 1982.

6. NoSQL Distilled, A brief guide to the emergining world of Polygot persistence, First Edition, Promod J, Sadalage Martin Fowler, 2012.

3.0 Prerequisites

Nil

4.0 Instructional Objectives

1. Understand the fundamentals and need of Database systems, Architecture Languages
2. Conceive database design through Relational model, Relational Algebra
3. Design Logical schema with constraints, familiarize SQL Queries
4. Standardization of Database through Normalization
5. Understand Storage Management, the practical problems of Concurrency control, Failures and recovery, NoSQL database

5.0 Overall Assessment Plan

#	Component	Portion to be Covered	Topics to be Assessed	Mode of Assessment	Mark	Remarks
1	1A	Unit 1	Basic three tier architecture, Construction of DB using ER Model	Theory based assessment - Written Test	4	11.2
2	1B	Unit I	Problem understanding, Identification of Entity and Relationships, Construction of DB using ER Model for their project	Project based assessment - Mindmap, Presentation, Viva	10	
3	1C	Unit 1	Justification related to DBMS design of ER Diagram	Online Global Certification Course / Realtime Project	2	
4	2A	Unit II	Conversion of ER model to Relational Schemas, Tuple Relational calculus, Domain Relational calculus	Theory based assessment - Written Test	4	12
5	2B	Unit II	Design of Relational Schemas, Creation of Database and their Tables for their project	Project based assessment - Demo, Viva, Report	10	
6	2C	Unit II	Design of Relational Schemas, Creation of Database and their Tables for Realtime project	Online Global Certification Course / Realtime Project - Demo, Viva, Report	2	
7	3A	Unit III	Understanding and applying concepts of Constraints, queries, sub queries, nested queries, joins, views, Triggers and Cursors	Theory based assessment - Written Test	4	13
8	3B	Unit III	Writing the complex queries based on the	Project based assessment - Demo,	10	

			concepts of constraints, sets, joins, views, Triggers and Cursors	Viva, Report		
9	3C	Unit III	Writing the complex queries based on the concepts of constraints, sets, joins, views, Triggers and Cursors	Online Global Certification Course / Realtime Project - Demo, Viva, Report	2	
10	4A	Unit IV	Understanding the pitfalls in relational design, functional dependencies and different normalizations	Theory based assessment - Written Test	4	12
11	4B	Unit IV	nalyzing the pitfalls, identifying the dependencies and applying normalizations	Project based assessment - Project Demo, Report	10	
12	4C	Unit IV	Analyzing the pitfalls, identifying the dependencies and applying normalizations in real-time projects	Online Global Certification Course / Realtime Project - Project Demo, Report	2	
13	5A	Unit V	List and identify the requirement of Concurrency control and recovery mechanisms.	Theory based assessment - Written Test	4	12
14	5B	Unit V	Implementation of concurrency control and recovery mechanisms.	Project based assessment - Project Demo, Report	10	
15	5C	Unit V	Implementation of concurrency control and recovery mechanisms in real-time project	Online Global Certification Course / Realtime Project - Project Demo, Report	2	
16	6A		Final project	Final Presentation with front-end, Report Submission, Demo	10	
17	6B		Online Global Certification Course in Oracle/SQL (or) Real-time Project	Final Presentation with front-end, Report Submission, Demo	10	
Total					100	

6.0 Tentative Test Schedule

#	Tentative date	Test	Marks	Portion	Duration

1	06-02-2024	Written Test	25	Unit 1	50 minutes
2	27-02-2024	Activity- Assignment- Solving Book back Exercises	10	Unit 2	50 minutes
3	26-03-2024	Written Test	25	Unit 3	50 minutes
4	12-04-2024	Activity - Role Play – Chart preparation	10	Unit 4	50 minutes
5	03-05-2024	Written Test	25	Unit 5	50 minutes

7.0 Detailed Test Plan

Test Components	Type of Test	Tentative Date	Internal Mark	Question Pattern	Mode
1A	Written Test	06-02-2024	4	Total: 25 Marks Exam Pattern: Concept Understanding Questions – 5 * 2 = 10 Scenario based / HOTs Questions – 3 * 5 = 15	Physical Exam
2A	Activity- Assignment- Solving Book back Exercises	27-02-2024	4	Total: 10 Marks Questions – 2 * 5 = 10	Physical Exam
3A	Written Test	26-03-2024	4	Total: 25 Marks Exam Pattern: Query Writing 10 * 2 = 20 Trigger 1 * 5 = 5	Physical Exam
4A	Activity - Role Play – Chart preparation	12-04-2024	4	Total: 10 Marks Activity Pattern: Team size - 5 Each student should present 1 normal form	Physical Exam

5A	Written Test	03-05-2024	4	Total: 25 Marks Exam Pattern: Concept Understanding question 5 * 2 = 10 Scenario based / HOTs Questions – 3 * 5 = 15	Physical Exam

8.0 Mini Project Details

Test Components	Tentative date of final evaluation	Artifacts	Total Marks	Mark Split-up
1B	07-02-2024 and 14-02-2024	Problem understanding, Identification of Entity and Relationships, Construction of DB using ER Model for their project	10	Marks to be evaluated based on presentation and demo Problem Identification – 1 Marks Presentation - 2 Demo - 2 Marks Viva - 3 Report - 2 Marks
2B	28-02-2024 and 06-03-2024	Design of Relational Schemas, Creation of Database and their Tables for their project	10	Marks to be evaluated based on demo and viva voce Demo - 4 Marks Viva voce – 3 Marks Report - 3 Marks
3B	27-03-2024 and 04-04-2024	Writing the complex queries based on the concepts of constraints, sets, joins, views, Triggers and Cursors	10	Marks to be evaluated based on demo and viva voce Demo - 4 Marks Viva - 3 Marks Report -3 Marks
4B	15-04-2024	Analyzing the pitfalls, identifying the dependencies and applying normalizations	10	Marks to be evaluated based on demo and viva voce Demo - 4 Marks Viva - 3 Marks Report - 3 Marks
5B	29-04-2024	Implementation of concurrency control and recovery mechanisms.	10	Marks to be evaluated based on demo and viva voce Demo - 4 Marks Viva - 3 Marks Report - 3 Marks
6A	07-05-2024 and 08-05-2024	Final project	10	Marks to be evaluated based on presentation and demo Final Presentation - 2 Demo - 2 Marks Viva - 3 Marks Report - 3 Marks

9.0 Online Global Certification Course / Real-Time Project Plan

Test Components	Marks	Tentative Date	Split-up
1C	2	07-02-2024	Registering for Online Global Certification / Letter from the employer for Real-time Projects
2C	2	28-02-2024	20% Assignment submission / online course completion of Online Global Certification / 20 % Real-time project completion
3C	2	27-03-2024	40% Completion of Online Global Certification / 40% Real-time project completion
4C	2	15-04-2024	60% Completion of Online Global Certification / 60% Real-time project completion certificate
5C	2	29-04-2024	80% Completion of Online Global Certification / 80% Real-time project completion certificate
6B	10	07-05-2024	Completion of Online Global Certification / Real-time project completion certificate from the employer

10.0 Detailed Session Plan

S.No	Topics to be covered	Hours	Ref	Teaching method	Testing method
Unit 1					
1,2	Issues in File Processing System, Need for DBMS, Basic terminologies of Database	2		PPT, BB	Illustration using example
3	Database system Architecture	1		PPT, BB	Illustration using example
4	Case Study on Various Database Architecture	1		PPT, BB	Illustration using example

5,6	Various Data models	2		PPT, BB	Illustration using example
7,8	ER diagram basics and extensions	2		PPT, BB	Illustration using example
9,10	Construction of Database design using Entity Relationship diagram for an application such as University Database, Banking System, Information System	2		PPT, BB	Group Discussion, Scenario Discussion Illustration using example
11,12	Construction of Relational Schemas	2		PPT, BB	Group Discussion, Scenario Discussion Illustration using example
UNIT II					
13	Conversion of ER model to Relational Table	1		PPT, BB	Flipped Class Room
14,15	Case study: Apply conversion concept. Discussion of various design issues	2		PPT, BB	Flipped Class Room
16	Pitfalls in Relational Database systems	1		PPT, BB	Crossword Puzzle
17,18	Understanding various Relational languages such as Tuple Relational calculus	2		PPT, BB	Illustration using example
19,20	Domain relational calculus	2		PPT, BB	Illustration using example
21	Calculus Vs Algebra	1		PPT, BB	Illustration using example
22	Computational capabilities	1		PPT, BB	Illustration using example
23,24	Case Study: Applying Relational Algebra for all the queries of application Designed.	2		PPT, BB	Brainstorming
Unit III					
25	SQL commands	1		PPT, BB	Gamification

26	Constraints	1		PPT, BB	Illustration using example
27	Joins	1		PPT, BB	Illustration using example
28	Set operations	1		PPT, BB	Illustration using example
29	Sub queries	1		PPT, BB	Illustration using example
30	Views	1		PPT, BB	Illustration using example
31	PL – SQL	1		PPT, BB	Illustration using example
32	Triggers	1		PPT, BB	Illustration using example
33	Cursors	1		PPT, BB	Illustration using example
34	Case Study: Implement all the queries using SQL	1		PPT, BB	Illustration using example
35	Case Study: Implement all the queries using PL-SQL	1		PPT, BB	Illustration using example
36	Case Study: Implement all the queries using Cursor and Triggers	1		PPT, BB	Illustration using example
Unit IV					
37	Normalization	1		PPT, BB	Illustration using example
38	Need for Normalization	1		PPT, BB	Illustration using example
39	NF1	1		PPT, BB	Illustration using example
40,41	NF2	2		PPT, BB	Illustration using example

42,43	NF3	2		PPT, BB	Illustration using example
44,45	NF4	1		PPT, BB	Illustration using example
46	NF5	1		PPT, BB	Illustration using example
47,48	Case study: Apply Conversion rules and normalize the Database	2		PPT, BB	Illustration using example
Unit V					
49,50	Storage Structure	2		PPT, BB	Illustration using example
52,53	Transaction control	2		PPT, BB	Illustration using example
54,55	Concurrency control algorithms	2		PPT, BB	Illustration using example
56	Issues in Concurrent execution	1		PPT, BB	Illustration using example
57,58	Failures and Recovery algorithms	2		PPT, BB	Illustration using example
59,60	Case Study: Demonstration of Entire project by applying all the concepts learned with minimum Front-End requirements, NoSQL Database, Document Oriented, Key Value pairs, Column Oriented and Graph	2		PPT, BB	Group Discussion, Scenario Discussion Illustration using example

11. Overall Execution Plan:

#	Activity	Target Dates	Responsibilities	Assigned to
1	Video Content Preparation	19-01-2024	List of topics unit-wise assigned to faculty members Send the list of topics planned to course coordinator/audit professors for review **Guidelines for video preparation:** 1. Each video should cover concepts of topic assigned. 2. Duration of video to be from 7 to 10 mins only. 3. Common template to be used by all. 4. Formal Dress code while recording.	All faculties. Team Heads
2	Question Bank Preparation	13-02-2024	1. Each faculty to prepare for the respective units assigned. 2. Questions have to be framed on own and not to be taken as such from any other source. Other sources can be referred, but the question has to be modified, say with different example and so on. 3. Solution is required for all questions. Concept Understanding Questions - 2 Scenario based / HOTs Questions - 1 4. Team Heads are responsible for distributing topics to team members and no topics are missed.	All faculties. Team Heads
3	Question Bank Scrutiny	01-02-2024 15-02-2024 20-03-2024 08-04-2024 20-04-2024	1. Check for the quality of the questions as per the category in the question bank. 2. Ensure there are no repetitions. 3. Coordinate with CC.	SPOC Team
4	Cycle Test	06-02-2024 27-02-2024 26-03-2024 12-04-2024 29-04-2024	1. Select the question from Question Bank 2. Share the QP to audit professor for review 3. Plan for cycle tests question paper printing, print and distribute. 4. Coordinate with CC.	SPOC Team

5	Course File Preparation	13-03-2024 25-04-2024 15-05-2024 26-05-2024	1. Responsible for the preparation of course file as per the checklist. 2. At the end of each CT exam, files should be updated and got verified from the Team Head. 3. Participate in result analysis activity. 4. Course Files are to be prepared for each department and the faculties listed are responsible for the preparation including CO-PO Mapping, attainment of Cos, etc. 5. Coordinate with CC.	SPoCs Course File Team
6	Feedback Collection and Minutes of Meeting	17-02-2024 17-03-2024 14-04-2024 18-05-2024 30/05/2024	1. Scribe and prepare minutes of meeting for all meetings conducted. 2. Share the MoM to CC and Audit professors on the same day or the next of meeting.	Team