TEACHING PLAN

1.	**Course Name**	Database
2.	**Course Code**	SOF202
3.	**Credit Value**	4
4.	**Academic Session**	2024/09
5.	**Lecturer(s)**	Subashini A/P Ganapathy
6.	**Tutor(s) (if any)**	-

7.	**Course Learning Outcomes (CLO)**	At the end of the course, students will be able to:

CLO1	Describe the basic theories (relational algebra, database architecture, normalization and query optimization theories, etc...) to support the designing of database.
CLO2	Demonstrate **teamwork** for solving problem using database concepts.
CLO3	Use E-R diagram to model the database, transaction features and of DBMS to achieve fault recovery and concurrency control.
CLO4	Construct SQL statements to define and manage (query and update) relational database for given problem.

8. Sequence of planned lessons	**Topics**
Week 1	Course Introduction
Week 1	Topic 1: General Introduction o Data model o Database system structure o Database system composition
Week 2	Topic 2: Relational Model o Relational data structure o Relational operation o Relational algebra
Week 3	Topic 2: Relational Model o Relational data structure o Relational operation o Relational algebra **Release: Assignment**
Week 4	Topic 2: Relational Model o Relational data structure o Relational operation o Relational algebra
Week 5	Topic 3: SQL o Data definition o Data query o Data insertion o Data update o Views

Week 6	Topic 4: Database Security
	    o Computer security
	    o Access control
	    o Grant and revoke authority
	    o Role
	
	Release: Lab Report

Week 7	Topic 5: Database Integrity
	    o Entity integrity
	    o Reference integrity
	    o User-defined integrity
	    o Trigger

Week 8	Topic 6: Relational Database Theory
	    o Functional dependency
	    o Normal form
	    o 1NF, 2NF, 3NF, BCNF
	    o Multi-valued dependency
	    o 4NF

Week 9	• SQL activities • Lab exercises

Week 10	Topic 7: Relational Database Design
	    o Requirements analysis
	    o Conceptual design
	    o Logical design
	    o Physical design
	Due : Assignment Submission

Week 11	Topic 8: Query Processing and Optimization
	    o Query processing steps
	    o Select operation implementation
	    o Join operation implementation
	    o Query optimization
	    o Algebra optimization

Week 12	Topic 9: Database Recovery
	    o Transaction
	    o Database fault
	    o Recovery technologies
	    o Recovery strategies
	
	Due : Lab Report Submission

Week 13	Topic 10: Concurrency Control
	    o Lock-based protocols
	    o Deadlock
	    o Timestamp-based protocols

Week 14	**Revision Week**
Week 15	**Final Examination Week**

No.	List of Practical Activities
9. Required Materials (including equipment & technology)	
1.	**Activities:** • ER Modelling, Querying **Laboratory:** • Personal Computers **Materials/ Software used:** • DBMS

10. Assessments

Course Assessment (Grouping)	40%
• Assignment 1	25%
• Lab Report 1	15%
Final Assessment (Individual)	60%
• Final Examination	60%

11. Assessments that align to Course Learning Outcomes (CLO)

Assessment	CLO 1	CLO2	CLO3	CLO4
Continuous Assessment				
• **Assignment 1**		✓	✓	✓
• **Lab Report 1**		✓		✓
Final Assessment				
• **Final Examination**	✓		✓	✓

12. Main Reference(s)

Required References
1. Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems (7th Edition), Pearson, 2017. (ISBN-10: 9789332582705)

Further Readings
2. Nenad Jukic, Susan Vrbsky and Svetlozar Nestorov. Database Systems: Introduction to database and data warehouses (2th Edition), prospect press, 2016 (ISBN-13: 978-1943153190)

3. Luc Perkins, Eric Redmond Jim Wilson.seven databases in seven weeks: A guid to modern databases and the NoSQL movement(2th Edition) ,2018(ISBN-13: 978-1680502534)