

Title of the Course: Advanced Database Systems Laboratory	L	T	P	Credits
Course Code: UCSPC0632	-	-	2	1

Course Prerequisite: Relational Database Management Systems (RDBMS), Programming Language

Course Description:

To Understand the fundamentals of object-oriented databases, parallel database and distributed database. This Course introduces students to the concepts, design, and implementation of NoSQL databases and the characteristics that distinguish them from traditional relational database management systems.

Course Learning Objectives:

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| <ol style="list-style-type: none"> 1. Understand the Fundamentals of Object Database Systems 2. Design Efficient Object Oriented Databases using complex data types. 3. Illustrate features of Parallel and Distributed Databases 4. Develop NOSQL databases and its applications. |
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Course Outcomes:

COs	After Completion of the course, the student should be able to	Bloom's Cognitive	
		Level	Descriptor
CO1	Experiment with Parallel and Distributed Databases.	3	Experiment
CO2	Build Object Oriented databases with complex data types.	3	Build
CO3	Design solutions to real life problems using various NOSQL databases	6	Design

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO01	PSO02
CO1	3	2	2	3	3	2					3	1	3
CO2	2	2	2	3	3	2					2	1	2
CO3	2	2	2	3	3	2				1	3	3	3

Assessment:

One component of In Semester Evaluation (ISE) and One End Semester Examination (ESE).

Assessment	Marks
ISE	25
ESE	50

ISE: Assessment is based on experiments/assignment/quiz/seminar/Hacker rank/LeetCode etc.

ESE: Assessment is based on Practical Oral Examination.

Course Contents:

Experiment No. 1: Installation of Oracle database.	2 Hours
Experiment No. 2: Create Complex Data Types and Perform SQL operations.	2 Hours
Experiment No. 3: Implement the Inheritance concept in OODBMS.	2 Hours
Experiment No. 4: Implementation of Horizontal and Vertical Fragmentation and perform operations	2 Hours
Experiment No. 5: Implementation of tablespace for database administration	2 Hours
Experiment No. 6: Implementation of Range and Hash Partitioning.	2 Hours
Experiment No. 7: Installation of MongoDB Compass, CouchDB and Cassandra.	2 Hours
Experiment No 8: Create and manage NoSQL Databases with MongoDB.	2 Hours
Experiment No.9: Create and manage NoSQL Databases with CouchDB.	2 Hours
Experiment No.10: Create and manage NoSQL Databases with Cassandra.	4 Hours
Experiment No. 11: Create and manage NoSQL Databases with Neo4j.	2 Hours
Experiment No. 12: Course mini project to solve real life problems, Students has to create teams of 3 to 4 students, The course teacher should help students to select projects on real life problem statements related to Database.	2 Hours

Software required :

1. Oracle
2. MongoDB
3. Cassandra
4. Neo4j
5. CouchDB

Textbooks: