

<b>Course code &amp; name</b>	<b>CSI2004 - Advanced Database Management Systems</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>J</b>	<b>C</b>
		<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Pre-requisite</b>	<b>CSI1001 - Principles of Database Systems</b>	<b>Syllabus version</b>				
		v.1.0				
<b>Course Objectives:</b>						
<ol style="list-style-type: none"> <li>1. To design conceptual and physical database tuning</li> <li>2. To comprehend the concepts of parallel, distributed, multimedia and spatial database</li> <li>3. To learn the concepts of mobile and cloud database</li> <li>4. To understand the concepts of security and emerging technologies in database.</li> </ol>						
<b>Expected Course Outcome:</b>						
<ol style="list-style-type: none"> <li>1. Acquire the concept of physical database design and tuning</li> <li>2. Learn the concept of parallel and distributed database</li> <li>3. Obtain the knowledge of multimedia and spatial database</li> <li>4. Apply the concepts of mobile and cloud database in realtime applications</li> <li>5. Distinguish various emerging database technologies and Analyze various security issues in databases</li> </ol>						
<b>Student Learning Outcomes (SLO):</b>						
<ol style="list-style-type: none"> <li>1. Having an ability to apply mathematics and science in engineering applications</li> <li>5. Having design thinking capability</li> <li>7. Having computational thinking (Ability to translate vast data into abstract concepts and to understand database reasoning)</li> </ol>						
<b>Module:1</b>	<b>Database Design Techniques</b>	<b>6 hours</b>				
Introduction to DBMS – EER – Physical database design and tuning – Advanced transaction processing and Query processing						
<b>Module:2</b>	<b>Parallel Databases</b>	<b>5 hours</b>				
Architecture, Data partitioning strategy, Interquery and Intraquery Parallelism –Parallel query optimization						
<b>Module:3</b>	<b>Distributed Databases</b>	<b>7 hours</b>				
Structure of distributed database, Advantages, Functions, Distributed database architecture, Allocation, Fragmentation, Replication, Distributed query processing, Distributed transaction processing, Concurrency control and Recovery in distributed database systems.						
<b>Module:4</b>	<b>Multimedia and Spatial Databases</b>	<b>7 hours</b>				
Multimedia sources, issues, Multimedia database applications Multimedia database queries-LOB in SQL. Spatial databases -Type of spatial data– Indexing in spatial databases.						
<b>Module:5</b>	<b>Mobile and Cloud Databases</b>	<b>8 hours</b>				
Wireless network communication, Location and handoff management, Data processing and mobility, Transaction management in mobile database systems, Database options in the cloud, Changing role of the DBA in the cloud, Moving your databases to the cloud						
<b>Module:6</b>	<b>Emerging Database Technologies</b>	<b>5 hours</b>				
Active database – Detective database- Object database - Temporal database - Streaming databases						

<b>Module:7</b>	<b>Database Security</b>	<b>5 hours</b>	<b>CO: 5</b>
Introduction to Database Security Issues –Security Models – Different Threats to databases – Counter measures to deal with these problems			
<b>Module:8</b>	<b>Recent Trends</b>	<b>2 hours</b>	
	<b>Total Lecture hours:</b>	<b>45 hours</b>	
<b>Text Book(s)</b>			
1.	Raghu Ramakrishnan, Database Management Systems, Mcgraw-Hill,4 <sup>th</sup> edition,2015		
2.	Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Seventh Edition, Tata McGraw Hill, 2019.		
<b>Reference Books</b>			
1.	RamezElmasri, Shamkant B. Navathe, “Fundamentals of Database Systems”, Seventh Edition, Pearson Education, 2016.		
2.	Vlad Vlasceanu, Wendy A. Neu, Andy Oram, Sam Alapati, “An Introduction to Cloud Databases”, O'Reilly Media, Inc. 2019		
3.	Yogesh Sharma, Devesh Agarwal, “Advanced Database Management Systems” Bhavya Books, 2017		
4.	S.K.Singh, Database Systems: Concepts, Design & Applications, 2011, 2nd Edition, Pearson education.		
Mode of Evaluation: CAT/ Digital Assignments/ Quiz/ FAT/ Project.			
Recommended by Board of Studies		DD-MM-YYYY	
Approved by Academic Council		No. xx	Date DD-MM-YYYY