

## Distributed Database Systems **Tentative** Schedule (2020-09)

Date	Lecture	After Lecture
Week 1 Sept. 15, 2020	<ol style="list-style-type: none"> <li>Course Overview (Course Goal, Course Content, Course Structure, Course Deliverables)</li> <li>Historic Development of Database Systems</li> </ol>	
Week 2 Sept. 22, 2020	<ol style="list-style-type: none"> <li>DDBS Introduction (What is a distributed database system (DDBS)? Promises of DDBSs; Complicating Factors; Problem Areas)</li> <li>Date's 12 Rules for Distributed Database Systems</li> </ol>	
Week 3 Sept. 29, 2020	<ol style="list-style-type: none"> <li>Distributed Database Architecture (Top-Down DDBS Architecture Design - Schema and Distribution Transparency; Bottom-up DDBS Architecture Design - Alternative Architectures including clients-server, master-slaves, peer-to-peer distributed DBMS, multi-databases)</li> </ol>	
Week 4 Oct. 6, 2020	<ol style="list-style-type: none"> <li>Distributed Database Architecture (Top-Down DDBS Architecture Design - Schema and Distribution Transparency; Bottom-up DDBS Architecture Design - Alternative Architectures including clients-server, master-slaves, peer-to-peer distributed DBMS, multi-databases)</li> </ol>	
Week 5 Oct. 13, 2020	<ol style="list-style-type: none"> <li>Distributed Database Design (Horizontal Fragmentation, Derived Horizontal Fragmentation, and Vertical Fragmentation)</li> </ol>	Assignment 1
Week 6 Oct. 20, 2020	<ol style="list-style-type: none"> <li>Distributed Query Processing (Query Decomposition and Localization)</li> </ol>	
Week 7 Oct. 27, 2020	<ol style="list-style-type: none"> <li>Optimization of Distributed Queries</li> <li>Optimization of Distributed Queries (Cont.) (Centralized Query Optimization - Ingres, System R; Distributed Ingres, R*)</li> <li>Search on Encrypted Data</li> </ol>	Assignment 1 Due  Assignment 2
Week 8 Nov. 3, 2020	<ol style="list-style-type: none"> <li>Transaction Management (Execution Schedule and Serializability Theory,</li> <li>Concurrency Control Algorithm - locking)</li> </ol>	
Week 9 Nov. 10, 2020	<ol style="list-style-type: none"> <li>Distributed Concurrency Control</li> <li>(Pessimistic vs. Optimistic Distributed Concurrency Control Algorithm - timestamp ordering)</li> </ol>	Assignment 2 Due Assignment 3
Week 10 Nov. 17, 2020	<ol style="list-style-type: none"> <li>Distributed DBMS Reliability (Write-Ahead Logging and Checkpoint, Centralized DBMS Reliability, Distributed Reliability and Failure Recovery, Distributed Two-Phase Commit - 2PC)</li> </ol>	

	Protocol, Three-Phase Commit (3PC) Protocol, Dealing with Site Failures)	
Week 11 Nov. 24, 2020	1. Distributed DBMS Reliability	Assignment 3 Due
Week 12 Dec. 1, 2020	1. Beyond Traditional DBMS	
Week 13 Dec. 8, 2020	1. Parallel and Streaming Data Management	
Week 14 Dec. 15, 2020	1. Data Warehousing and OLAP 2. Course Summary	
Week 15 Dec. 22, 2020	Project Tutorial	
Week 16 Dec. 29, 2020	Project Final Presentation and Demo	Report & manual Due