

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

Date	Lecture	After Lecture
Week 1 Sept. 15, 2020	<ol style="list-style-type: none"> Course Overview (Course Goal, Course Content, Course Structure, Course Deliverables) Historic Development of Database Systems 	
Week 2 Sept. 22, 2020	<ol style="list-style-type: none"> DDBS Introduction (What is a distributed database system (DDBS)? Promises of DDBSs; Complicating Factors; Problem Areas) Date's 12 Rules for Distributed Database Systems 	
Week 3 Sept. 29, 2020	<ol style="list-style-type: none"> 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) 	
Week 4 Oct. 6, 2020	No class	
Week 5 Oct. 13, 2020	<ol style="list-style-type: none"> Distributed Database Design (Horizontal Fragmentation, Derived Horizontal Fragmentation, and Vertical Fragmentation) 	Assignment 1
Week 6 Oct. 20, 2020	<ol style="list-style-type: none"> Distributed Query Processing (Query Decomposition and Localization) Big O-Notation 	
Week 7 Oct. 27, 2020	<ol style="list-style-type: none"> Optimization of Distributed Queries Optimization of Distributed Queries (Cont.) (Centralized Query Optimization - Ingres, System R; Distributed Ingres, R*) Search on Encrypted Data 	Assignment 1 Due Assignment 2
Week 8 Nov. 3, 2020	<ol style="list-style-type: none"> Transaction Management (Execution Schedule and Serializability Theory, Concurrency Control Algorithm - locking) 	Assignment 2 Due
Week 9 Nov. 10, 2020	<ol style="list-style-type: none"> Distributed Concurrency Control (Pessimistic vs. Optimistic Distributed Concurrency Control Algorithm - timestamp ordering) 	Assignment 3
Week 10 Nov. 17, 2020	<ol style="list-style-type: none"> Distributed DBMS Reliability (Write-Ahead Logging and Checkpoint, Centralized DBMS Reliability, Distributed Reliability and Failure Recovery, Distributed Two-Phase Commit - 2PC Protocol, Three-Phase Commit (3PC) Protocol, Dealing with Site Failures) 	
Week 11	<ol style="list-style-type: none"> Distributed DBMS Reliability 	Assignment 3

Nov. 24, 2020		Due
Week 12 Dec. 1, 2020	<ol style="list-style-type: none"> 1. Beyond Traditional DBMS 2. Parallel and Streaming Data Management 	
Week 13 Dec. 8, 2020	<ol style="list-style-type: none"> 1. Data Warehousing and OLAP 2. Course Summary 	
Week 14 Dec. 15, 2020	Project Tutorial	
Week 15 Dec. 22, 2020	Project Tutorial	
Week 16 Dec. 29, 2020	Project Final Presentation and Demo	Report & mannual Due