

**University of Computer Studies**  
**Faculty of Information Science**  
**2023-2024 Academic Year**  
**Fourth Year – (B.C.Sc.) (Sr.)**  
**Lecture Plan**

**Code** : CS-4225 **Semester:** Second Semester  
**Course** : **Advanced Database System**  
**Text Book** : Database System Concepts (7<sup>th</sup> Edition)  
by Abraham Silberschatz, Henry F. Korth, S. Sudarshan  
**Reference** : Database System Concepts (6<sup>th</sup> Edition)  
by Abraham Silberschatz, Henry F. Korth, S. Sudarshan  
**Prerequisite** : **Database System Structure (CS-3125)**  
**Credit Unit** : 3 ACUs  
**Period** : 64 Periods for 16 Weeks (4 Periods \* 16 Weeks)

Chapter	Title	Period	Remark
	<b>Parallel and Distributed Databases</b>		
20	<b>Database System Architectures</b> 20.1 Overview 20.2 Centralized Database Systems 20.3 Server System Architectures 20.4 Parallel Systems 20.5 Distributed Systems 20.6 Transaction Processing in Parallel and Distributed Systems 20.7 Cloud-Based Services 20.8 Summary Exercises	10	
21, 22, 23	<b>Parallel and Distributed Database System Storage, Query Processing and Transaction Processing</b> 21.1 Overview 21.2 Data Partitioning 21.4 Replication 21.5 Parallel Indexing 21.6 Distributed File Systems 21.7 Parallel Key-Value Stores 21.8 Summary 22.1 Overview 22.2 Parallel Sort 22.3 Parallel Join 22.4 Other Operations 22.5 Parallel Evaluation of Query Plans 22.9 Distributed Query Processing 22.10 Summary 23.1 Distributed Transactions 23.2 Commit Protocols 23.3 Concurrency Control in Distributed Databases 23.4 Replication 23.5 Extended Concurrency Control Protocols Exercises	20	
25	<b>Advanced Application Development</b> 25.1 Performance Tuning 25.2 Performance Benchmarks 25.3 Other Issues in Application Development 25.4 Standardization 25.5 Distributed Directory Systems 25.6 Summary	15	

Chapter	Title	Period	Remark
	Exercises		
	<b>Application Design and Development</b>		
8	<b>Complex Data Types</b> 8.1 Semi-structured Data 8.2 Object Orientation 8.3 Textual Data 8.4 Spatial Data 8.5 Summary Exercises	10	
9	<b>Application Development</b> 9.1 Application Programs and User Interfaces 9.2 Web Fundamentals 9.3 Servlets and JSP 9.4 Alternative Server-Side Frameworks 9.5 Client-Side Code and Web Services 9.6 Application Architectures 9.7 Application Performance 9.8 Application Security 9.9 Encryption and Its Applications 9.10 Summary Exercises	5	Project Web-based Database Application
	<b>Revision</b>	4	
	<b>Total</b>	64	

### Assessment Plan

- Exam – 60%
- Quiz / Tutorial – 5%
- Assignment / Practical Lab – 5%
- Project – 30% (Database Application Development – Presentation + Report + Program)

### Reference Text Books Images

