



Zarqa University
Faculty: Information Technology
Department: Computer Information System
Course Title: Distributed Database (1502352)

Instructor: Dr. Khaled Maabreh
Lecture's time: 9:30-11:00 am
Semester: Second/2016-2017
Office Hours: 10:00-11:00
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Course description:

This course discusses topics in a Distributed Database, Architecture, Queries, Transaction Management and Concurrency Controls, because databases have started to grow explosively and the number of users is increasingly growing, the storage is no longer being centralized but distributed. It is now possible to have centralized access to information that is distributed among several high performance nodes.

Aims of the course:

This course aims to provide students with the principles and foundations of distributed database system, including concepts, architecture, design issues, integrity control, query processing and optimization, transactions, and concurrency control. Students will be also learning the data independence approaches that are leading to transparencies at multiple levels.

At the completion of the course, the students will be expected to be able to: Learn the distributed database concepts, be able to outline the architecture of a database system and be able to apply distributed database systems technology to solving real-world problems.

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

A1. Concepts and Theories:

- Overview of the basic database concepts.
- List the basic terminologies of a distributed database.
- List the main concepts of a distributed database system.
- List the main computer network concepts and the basic terminologies.

A2. Contemporary Trends, Problems and Research:

- Promises of the DDBMS's and transparency management

A3. Professional Responsibility:

B. Subject-specific skills

B1. Problem solving skills:

- Learn How to outline the architecture of a database system.
- DBMS Standardization

B2. Modeling and Design:

- Learn how to build sample test cases for designing the distributed database systems.
- Alternative Design Strategies.

B3. Application of Methods and Tools:

- Learning the distributed database localization techniques.
- Fragmentation and allocation technique skills.
- Learning the security and integrity control

C. Critical-Thinking Skills

C1. Analytical skills: Assess

- Distinguish between centralized and distributed database systems technology.



C2. Strategic Thinking:

Understanding Techniques and methods of a distributed database system..

Understanding the techniques the problems of the query processing.

Query optimization.

Understanding the problems of a distributed database.

Understanding the basic concepts of a database security measures and techniques.

C3. Creative thinking and innovation:

Understanding the concepts and the techniques of the distributed transactions.

Analyze and investigate the transaction types and its properties.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication:

D2. Teamwork and Leadership:

Discuss several case studies and solving real-world problems through simple projects.

Course structures:

Week	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1	3	A1	Overview of Relational DBMS Relational DB Concepts Integrity Rules	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.• Cooperative learning and discussion.	
2	3	A1	Introduction to Distributed Database Systems Distributed Data Processing Data Delivery Alternatives	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.• Cooperative learning and discussion.	
3	3	A2, A3	Promises of DDBMS's Transparency management	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.• Cooperative learning and discussion.	
4	3	B1	Distributed DBMS Architecture DBMS Standardization Architectural Models for DDBM's	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.• Cooperative learning and discussion.	
5	3	B2	Distributed Database Design Alternative Design Strategies Design issues	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.• Cooperative learning and discussion.	
6	3	B3	Fragmentation Allocation	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.• Cooperative learning and discussion.	
7, 8	3	B2, B3	Semantic Data Control View Management Security and Integrity Control	<ul style="list-style-type: none">• Lecturing with active participations.• Problem solving.	

				<ul style="list-style-type: none"> • Cooperative learning and discussion. 	
9	3	A1	Overview of Computer Networks Overview of Query Processing	<ul style="list-style-type: none"> • Lecturing with active participations. • Problem solving. • Cooperative learning and discussion. 	
10, 11	6	C1, C2	Problems of Query Processing	<ul style="list-style-type: none"> • Lecturing with active participations. • Problem solving. • Cooperative learning and discussion. 	
12, 13	6	C2	Query Decomposition Localization of Distributed Queries Query Optimization	<ul style="list-style-type: none"> • Lecturing with active participations. • Problem solving. • Cooperative learning and discussion. 	
14	3	C3	Introduction to Transaction Management Definition of a Transaction Properties of Transactions Types of Transactions	<ul style="list-style-type: none"> • Lecturing with active participations. • Problem solving. • Cooperative learning and discussion. 	
15	3	C2	Basic topics of a database security	<ul style="list-style-type: none"> • Lecturing with active participations. • Problem solving. • Cooperative learning and discussion. 	
15, 16	6	D1, D2	Student's Projects Presentation	<ul style="list-style-type: none"> • Lecturing with active participations. • Problem solving. • Cooperative learning and discussion. 	

References:

A. Main Textbook:

Principles Of Distributed Database Systems. Third Edition. 2011. Author: M. Tamer Özsu, Patrick Valduriez.

B. Supplementary Textbook(s):

Fundamentals of Database Systems, Seventh Edition. 2015. Author: Elmasri R. and Navathe

Assessment Methods:

Methods	Grade	Date
First Exam	20%	
Second Exam	20%	
Assignments (Reports /Quizzes/ Participations,)	10%	
Final Examination	50%	