Course Definition File

Database system 2

Information

Technology

Engineering

Syrian Arab Republic		الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالــي
Syrian Virtual University		الجامعة الافتراضية السورية

1. Basic Information:

Course Name	Database system 2
Course ID	SDB601
No. of Recorded Sessions*	12
No. of Synchronized Sessions*	12
No. of Quizzes (hrs.)	2
Exam (hrs.)	2
Registered Sessions Work Load (hrs.)	24
Synchronized Sessions Work Load (hrs.)	24
Credit Hours	4

* The duration of each session 1.5 hr

2. Pre-Requisites:

Course	ID
Database Systems I	BDB501
Intelligent Algorithms	BIA601
In Parallel with Database systems Lab(2)	SDBL601

3. Course Objectives:

The "Database System (2)" course deals with the responsibility of completing the student's knowledge about database systems and introducing him to the types and applications of databases. Specifically, it enables students to:

1. First: Development of database management systems.

2. Second: Developing and managing transactions.

3. Third: Understand the mechanism of developing and managing central, parallel and distributed databases.

4. Fourth: Learn about big data structures.

5. Fifth: Understanding the mechanisms and methods of managing data and databases and their security.

4. Learning Outcomes (LO):

Upon completion of the course, the student must have:

- The ability to develop database management systems.

- Understand the techniques and methods of developing and managing transaction transactions

- The ability to develop and manage central, parallel and distributed databases.

- The ability to design and develop database applications.

- Understanding the methods and mechanisms of dealing with advanced databases and big data structures.

- Understand the mechanisms and methods of managing data, databases and their security.

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5. Assessment Results:

Chapter No.	Chapter Title	Intended Objectives	Assessment Type				
			Developed content/ Recorded Sessions	Practical Activities (Synchronized Sessions)	Quizzes and Exams	Presentations And Interviews	Reports
CH1	Advanced SQL	Comprehension –Analytical Thinking	X	X	X		X
CH2	Data Storage Structures	Comprehension –Analytical Thinking –Tools And Application Hands– On	X	X	X		X
CH3	Transaction Management	Comprehension –Analytical Thinking –Tools And Application Hands– On	X	X	X		X
CH4	Centralized, Parallel And Distributed Databases	Comprehension –Analytical Thinking –Tools	X	X	X		X

		And Application Hands– On					
CH5	Big Data and Analytics	Comprehension –Analytical Thinking – Application Hands– On	X	X	X		X
CH6	Data and database Administratio n	Comprehension –Analytical Thinking –Tools And Application Hands– On	X	X	X		X

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6. Course Syllabus

Chapter No.	Chapter Title	Chapter Content (Syllabus)	No. of Theoretical Learning Units	No. of Practical Learning Units)
CH1	Advanced SQL	1. Views 2. Accessing SQL from a Programming Language 3. Functions and Procedures 4. Triggers 5. Recursive Queries 6. Advanced Aggregation Features	1	1
CH2	Data Storage Structures	1. Database Storage Architecture 2. File Organization 3. Organization of Records in Files 4. Data−Dictionary Storage 5. Database Buffer 6. Column−Oriented Storage 7. Storage Organization in Main−Memory Databases	2	
CH3	Transaction Management	1. Transaction Concept 2. A Simple Transaction Model 3. Storage Structure 4. Transaction Atomicity and Durability	2	

		5. Transaction Isolation 6. Serializability 7. Transaction Isolation and Atomicity 8. Transaction Isolation Levels 9. Implementation of Isolation Levels 10. Transactions as SQL Statements		
CH4	Centralized, Parallel And Distributed Databases	1. Database−System Architectures 2. Centralized Database Systems 3. Server System Architectures 4. Parallel Systems 5. Distributed Systems 6. Transaction Processing in Parallel and Distributed Systems 7. Cloud−Based Services	2	
CH5	Big Data and Analytics	1. Introduction 2. Big Data 3. NoSQL 4. Analytics 5. Impact of Big Data And Analytics	2	1
CH6	Data and database Administration	1. The Roles of Data and Database Administrators 2. The Open Source Movement and Database Management 3. Managing Data Security 4. Database Software Data Security Features	1	

		5. Database Backup and Recovery 6. Controlling Concurrent Access 7. Data Availability		

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7. Practical Activity:

- Tools and Labs:

Tool Name	Description
Oracle 12C	Database management system
Power designer	Analytical tools to create databases
Database management systems	MS SQL server, My SQL, Access
Visual studio	Software development tools

- Practical Activities per Chapters:

Chapter	Practical Activity	Remarks
CH1	☒ Exercises ☒ Homework ☒ Webinars ☐ Project ☐ Other	
CH2	☒ Exercises ☒ Homework ☒ Webinars ☐ Project ☐ Other	
CH3	☒ Exercises ☒ Homework	

	☒ Webinars ☐ Project ☐ Other	
CH4	☒ Exercises ☒ Homework ☒ Webinars ☐ Project ☐ Other	
CH5	☒ Exercises ☒ Homework ☒ Webinars ☐ Project ☐ Other	
CH6	☒ Exercises ☒ Homework ☒ Webinars ☐ Project ☐ Other	

8. References:

1. Hoffer, J. A., Venkataraman, R., & Topi, H. (2019). *Modern database management* (13th ed.) Prentice Hall.

2. Silberschatz, A., Korth, H., & Sudarshan, S. (2019). Database system concepts (7th ed.) McGraw– Hill.