

جامعة الزيتونية الأردنية Al-Zaytoonah University of Jordan كلية العلوم وتكنولوجيا المعلومات Faculty of Science and IT



"Tradition and Quality"

Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ QF01/0408-4.0E **Department**

Study plan No.	2021/2022		University Specialization		Software Engineering	
Course No.	0114442		Course name		Database ma System	anagement
Credit Hours	3		Prerequisite Co-req	uisite	Database	
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	✓ Support course family requirements	Mandatory requirements	☐ Elective requirements
Teaching style	☐ Full online le	arning	□ Blended lear	ning	√Traditional	learning
Teaching model	□ 2Synchronous	s: 1asynchronous	☐ 2 face to face :	1synchronous	3 Tradit	tional

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-r	nail
Dr.Feras Ahmed Altarawneh	Assistant professor	117	325	f.altarawneh	@zuj.edu.jo
Division number	Time	Place	Number of students	Teaching style	Approved model

Brief description

The aim of the course is to introduce students to current techniques, methods and results from the active field of database systems and data management. Typical topics include query planning and optimization; transaction processing and concurrency control; database Security and Distribution; Advanced Database Models, data mining, data warehousing; File Structures, and Indexing and Hashing.

Learning resources

Course book information (Title, author, date of issue, publisher etc)	Fundamentals of Database System, Elmasri Ramez and Navathe Shamkant, Pearson India; 7th edition (March 17, 2017)			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	 Database Systems: Design, Implementation, & Management, Carlos Coronel, Steven Morris, 2018, 13th Edition, ISBN-10: 1337627909 David M. Kroenke, David J. Auer "Database Concepts" (7th Edition) ISBN-10: 0133544621 (2014) Database Systems design, Implementation and Management (12th Edition) by Carlos Coronel, Steven Morris, Publisher: Cengage Learning, (2016) 			
Supporting websites				
The physical environment for teaching	☐ Class room	✓ labs	☐ Virtual educational platform	☐ Others
Necessary equipment and software	MySQL software			



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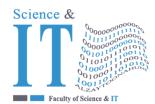
Supporting people with special needs	Lab supervisors with experience in SQL programming
For technical support	

Course learning outcomes (S = Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	The knowledge of the transaction processing concept, theories, and concurrency control mechanisms in the database system management.	MK3
K2	awareness of the algorithms used for query processing and optimization	MK4
K3	Understanding of the database indexing structures for database files	Mk4
K4	Understanding the data mining and data warehouse: concepts and implementation	Mk4
	Skills	
S1	An ability to apply the suitable concurrency control mechanisms for handling different concurrency problems.	MS2, MS3
S2	An ability to use the SQL programming language to apply different algorithms in query processing and optimization	MS2, MS3
S3	An ability to use the SQL programming language to create the appropriate index file for different database files.	MS2, MS3
S4	An ability to compare, analysis and evaluate methods/technologies in developing data warehouses & data mining	MS1
	Competences	
C1	An ability to develop optimizing queries, and indexing files for the database systems in diverse application domains.	MC2
C2	An ability to work with diverse team and communicate effectively	MC1
C3	An ability to learn from, and get expertise from different domains.	MC3
C4		

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	30%	40%	30%
Participation / practical applications	0	0	10%	30%
Asynchronous interactive activities	30%	30%	0	0
Final exam	40%	40%	50%	40%



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Note: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	Chapter 20 : Introduction to	Lecture	
	Transaction Processing Concepts and		
	Theory		
	 Introduction to transaction 		
	processing		
	 Transaction and system 		
	processing		776-805
	 Desirable properties of 		
	transactions		
2	 Characterizing schedules based 	Lecture	
	on recoverability		
	Characterizing schedules based		
	on serializability		
3	Chapter 21 : Concurrency Control	Lecture	812-827
	Techniques		
	Two-phase locking techniques		
	concurrency control	T .	
4	Concurrency control based on	Lecture	
_	Timestamp ordering	-	025.026
5	Multi-version concurrency	Lecture	835-836
	control techniques		
	Using locks for concurrency control in indexes		
6	Chapter 17: Indexing Structures for	Lecture	632-660
U	Files and Physical Database Design	Lecture	032-000
	Types of Single- level ordered		
	indexes		
7	Multilevel indexes	Lecture	
1	Dynamic Multilevel indexes		
	using B-tree		
8	Chapter 28: Data Mining Concepts	Lecture	1100-1120
	Overview of data mining		
	technology		
	Association rules		
	Classification		
	• Clustering		
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9	Chapter 29: Data Warehousing. Some important Concepts and OLAP • Introduction, definition and	Lecture	
	terminology		1122 1140
	Characteristics of data		1132-1140
	warehouses		
	 Data modeling for data warehouses 		
10	Chapter 22 : Database Recovery	Lecture	
	Techniques		
	 Recovery concepts NO-UNDO/REDO Recovery based on 		844-855
	Deferred update		861-862
11	 Recovery techniques based on immediate update 	Lecture	001 002
	Recovery in Multi-database systems		
12	Chapter 16: Disk Storage, Basic File	Lecture	572-585
	Structures, and Hashing and Modern		602-611
	Storage Architectures		618-621
	• Introduction		
10	Secondary storage device	-	207 127
13	Hashing techniques	Lecture	395 - 437
	Modern storage architectures		
14	Chapter 19: Query Optimization	Lecture	
	 Query trees and heuristics for 		
	query optimization		
	 Choice of query execution plans 		
15	• Using selectivities in cost-based	Lecture	722-743
	optimization		761-768
	An example of query		
	optimization in data warehouses		
	Overview of query optimization in Oracle		
16	Final Exam		

^{*} Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.

** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1			
2			
3			
4			



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