

Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Information Systems Department	QF01/0408-3.0E
---	-----------------------

Faculty	Faculty of Science and Information Technology	Department	Computer Information Systems
Course Number	0113344	Course Title	Advanced Databases
Number of Credit Hours	3	Pre-Requisite/Co-Requisite	Databases

Brief course description

This course provides the following topics:

Transaction, Failures, Inconsistency, Query Optimization, Indexing and Hashing, Distributed Databases, Special Data Types, Storage Units, RAID, and various advanced database topics.

Course Goals and Learning Outcomes	
Goal 1	Describe the concepts of the Transaction Management and Concurrency Control.
Learning Outcomes	1.1 To be able to demonstrate a good comprehension of the transaction properties.
Goal 2	To understand the causes, types, and solutions of transaction failure.
Learning Outcomes	2.1 To be able to identify the type of transaction failure. 2.2 To be able to apply the recovery methods to solve the failure.
Goal 3	To be acquainted with distributed database main concepts.
Learning Outcomes	3.1 To demonstrate a good comprehension of the distributed database concepts.
Goal 4	To grasp the basic concepts of various advanced database topics.
Learning Outcomes	4.1 To acquire the ability to use advanced database methods to solve real-life problems.
Textbook	1. Database Systems: Design, Implementation, and Management, 2012, Peter Rob, Carlos Coronel, and Steven Morris.
Supplementary References	1. DataBase System Concepts, 6th edition, McGraw Hill Book Company, 2013, by Abraham Silberschatz, Henry F.Korth and S.Sudarshan.

Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Information Systems Department	QF01/0408-3.0E
---	----------------

Course Timeline				
Week	Number of Hours	Course Topics	Pages (Textbook)	Notes
01	1 1 1	Transactions. Concept, Properties, States. Applications.	627-640 (Ref1)	
02	1 1 1	Recovery Systems Types of failures, Recovery methods, Log based recovery. Failure with loss of Nonvolatile storage.	721-743 (Ref1)	
03	1 1 1	Concurrency Control. Introduction, Consistency Problems, Locks.	661-701 (Ref1)	
04	1 1 1	Query Processing. Measures of Query cost, Selection, Sorting, Join.	537-563 (Ref1)	
05	1 1 1	Query Optimization. Transformation of Relational Expression, Estimating statistics of expression results.	579-598 (Ref1)	
06	1 1 1	General Review, Exercises, and First Exam 20%		
07	1 1 1	Hashing and Indexing. Basic concepts, Ordered Index, Static Hashing	475-509 (Ref1)	
08	1 1 1	Storage and File Structure. Overview of physical storage media, Magnetic Disk and Flash Storage, RAID.	429-441 (Ref1)	
09	1 1 1	Parallel Databases. Basic Concepts. Difference between parallel and distributed systems.	797-813 (Ref1)	
10	1 1 1	Distributed Databases. Homogenous and Heterogenous databases, Two phase commit protocol, Basic Distributed Database concepts	825-832(Ref1)	
11	1 1 1	Distributed Databases: Fragmentation, Transparency.	TB1	
12	1 1 1	Second Exam 20%		
13	1 1 1	Database Security	TB1	

Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Information Systems Department	QF01/0408-3.0E
---	-----------------------

14	1 1 1	Project Presentations		
15	1 1 1	Project Presentations		
16	1 1 1	Final Exam 50%		

Theoretical Course Evaluation Methods and Weight	Participation = 10% First Exam 20% Second Exam 20% Final Exam 50%	Practical (Clinical) Course Evaluation Methods	Semester Students' Work = 50% (Reports, Research, Quizzes, Etc.) Final Exam = 50%
---	--	---	---

Approved by Head of Department		Date of Approval	
---	--	-------------------------	--

Extra information (to be updated every semester by corresponding faculty member)

Name of Teacher		Office Number	
Phone Number (Extension)		Email	<u>_____@zuj.edu.jo</u>
Office Hours			